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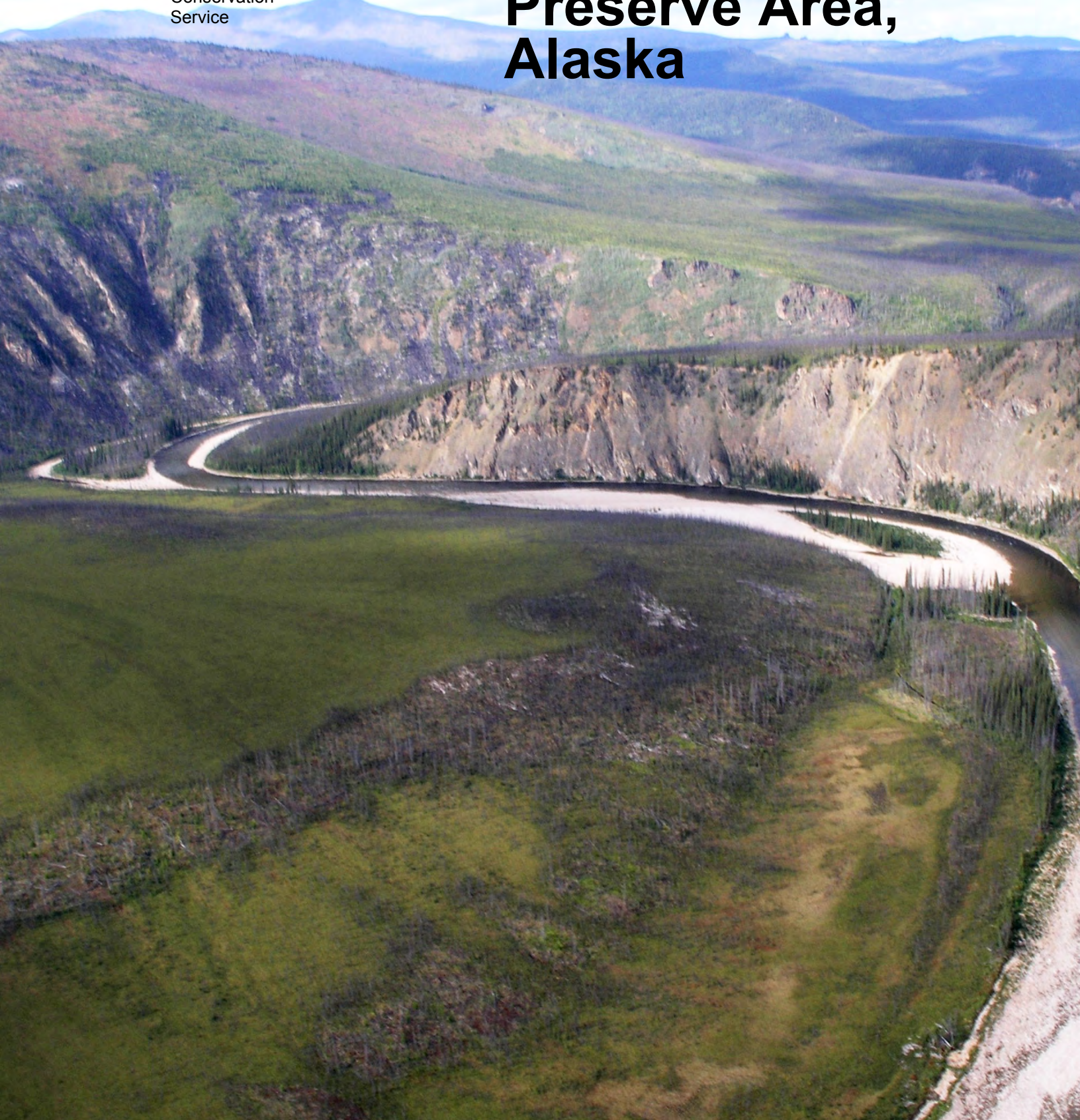


NRCS

Natural
Resources
Conservation
Service

In cooperation with the
U.S. Department of the
Interior, National Park
Service, and the
University of Alaska
Fairbanks, Agricultural
and Forestry
Experiment Station

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska



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By:

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(USDA, NRCS)

In cooperation with:

United States Department of the Interior, National Park Service, and the
University of Alaska Fairbanks, Agricultural and Forestry Experiment Station

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Maps and spatial data for this survey are available online at
<http://websoilsurvey.nrcs.usda.gov>.

Cover: A meandering portion of the Charley River, a National Wild and Scenic River. This is one of the few rivers that has this designation for its entire length (about 170 kilometers). The exceptionally clear Charley River is completely contained within the Yukon-Charley Rivers National Preserve (445,000-hectare watershed). The river drops 5.8 meters per kilometer in its upper reaches and offers whitewater challenges during periods of high water. Dall sheep, caribou, peregrine falcon, moose, and bears can be seen along its banks. Uplands surrounding this reach of the Charley River consist of hills with some escarpments around meander bends. Soils in this area consist of gravelly colluvium (uplands) and gravelly alluvium (flood plains of the Charley River), which are typical of detailed soil map units D31CF1—Boreal and Subalpine Hills with Extensive Permafrost (uplands) and D31UC4—Boreal Flood Plains with Common Permafrost (Charley River corridor).

How To Use This Soil Survey

Detailed Soil Maps

Hard copy detailed soil maps were not created for this survey. The maps and spatial data are available online at <http://websoilsurvey.nrcs.usda.gov>.

The [Contents](#) lists the map units by symbol and name and shows the page where each map unit is described. It shows which table has data on a specific land use for each detailed soil map unit. Also see the Contents for sections of this publication that may address your specific needs.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture, Natural Resources Conservation Service, and the United States Department of the Interior, National Park Service. The Natural Resources Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey.

The Natural Resources Conservation Service was responsible for the survey design and methodology, data collection and analysis, and completion of this report. Fieldwork was completed in June, July, August, and September of 2008, 2009, and 2010. Soil names and descriptions were approved in 2012. Unless indicated otherwise, maps and supporting documentation in this report refer to conditions in the survey area in 2012. This soil survey was made cooperatively by the Natural Resources Conservation Service, the National Park Service, and the University of Alaska Fairbanks, Agricultural and Forestry Experiment Station.

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Foreword

This soil survey was developed in conjunction with the National Park Service Inventory and Monitoring Program. It serves as the official source document for soils in the Yukon-Charley Rivers National Preserve Area, Alaska. The survey contains predictions of soil behavior for selected land uses. It also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Government agencies, community officials, Alaska Native tribes, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

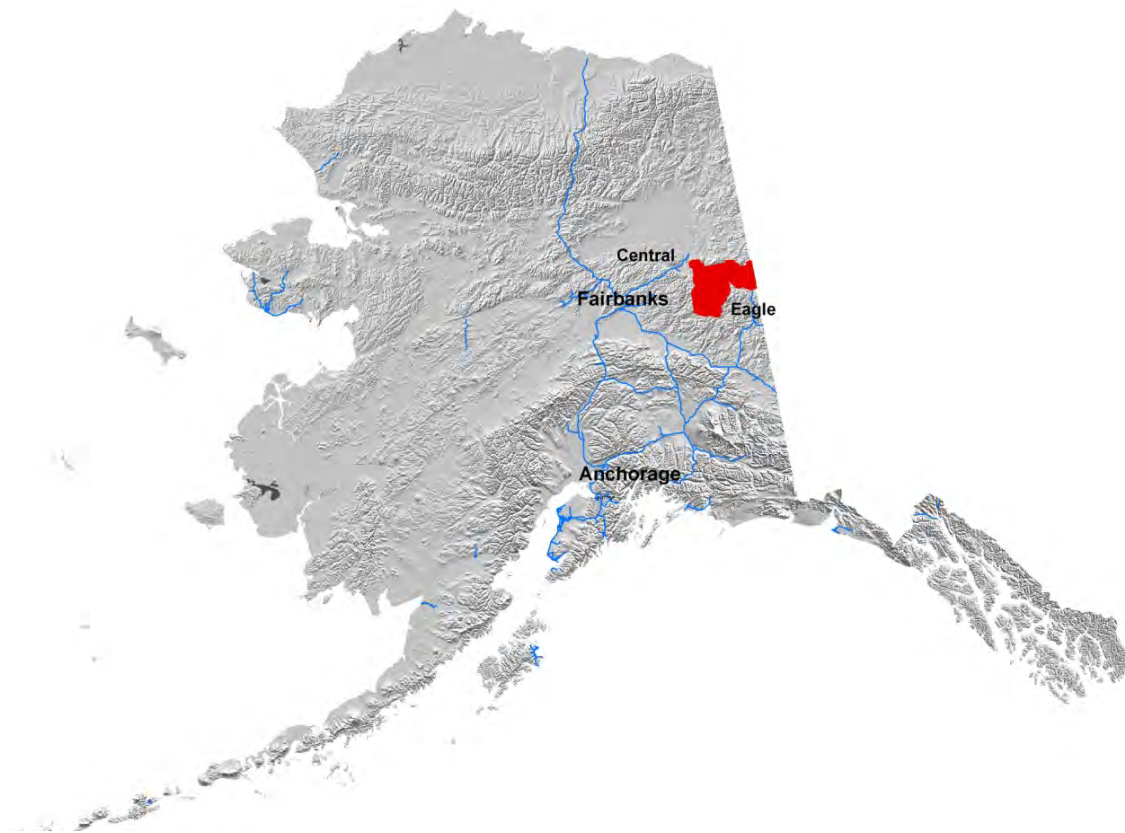
Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. The information in this report is intended to identify soil properties that are used in making various land use or land treatment decisions. Statements made in this report are intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://soils.usda.gov/sqi/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS state soil scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock or to permafrost. Some are too unstable to be used as a foundation for buildings or roads. Wet soils are poorly suited to use for waste treatment systems. A high water table makes a soil poorly suited to basements or underground installations.

Many soil properties that affect land use are described in this soil survey. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the Anchorage field office of the Natural Resources Conservation Service or the Alaska Cooperative Extension.

Robert N. Jones, State Conservationist
Natural Resources Conservation Service



Location of the Yukon-Charley Rivers National Preserve Area in Alaska (in red). The major road system within the State is represented in blue.

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Introduction

The Yukon-Charley Rivers National Preserve Area is in the far eastern part of interior Alaska, along the border with Canada. It is about 193 kilometers east of Fairbanks. The survey area is in two major land resource areas (MLRAs), 231—Interior Alaska Highlands and 232—Yukon Flats Lowlands ([fig. 1](#)). The area includes Alaska Native land, nonfederal land, and public land administered by the National Park Service (NPS). Primary land uses include recreation and fish and wildlife habitat. The area was first designated as a National monument in 1978. On December 2, 1980, the area was designated as a National preserve and the Charley River was designated as part of the National Wild and Scenic River System by the Alaska National Interest Lands Conservation Act. The survey area is about 1,022,021 hectares (2,523,509 acres) in size. This encompasses a corridor that is about 185 kilometers, along the Yukon River, and the entire Charley River watershed.

Survey Purpose and Product Limitations

The primary purpose of the survey is to describe and map the soils and ecological sites of the area. The soils were mapped at a scale of 1:63,360, and detailed descriptions of the map units, soil types, and ecological sites were developed, including historic climax plant communities and major seral communities. MLRAs are used at State and National levels to geographically divide different landscapes. They are intended to represent areas of subregional physiographic and geomorphic patterns and processes and general vegetation potentials (USDA, 2006). Within an MLRA, there are relatively consistent patterns and kinds of landforms, soils, surficial geologic and soil parent material, and geomorphic and soil-forming processes. The detailed soil maps can also be integrated into a multilevel ecological stratification of the area, based on ecological units, to aid in understanding the ecological aspects of the soil information (Bailey and others, 1994). Subsection level units ([fig. 2](#)) at a scale of 1:250,000 were established by Swanson (Swanson, 2001). The scale of the map base imposes certain cartographic limitations in terms of the minimum size of individual delineations that can be made while maintaining map legibility and the maximum location accuracy of polygon boundaries. On detailed soil maps compiled at a scale of 1:63,360, map unit delineations (or polygons) of less than about 1 square centimeter, or about 16 hectares, result in a reduction in map legibility and generally were not used. Maximum location accuracy of polygon lines that can be expected at this map scale is about 15 meters. The subsection map was compiled at a scale of 1:250,000, resulting in a minimum legible delineation of about 251 hectares. These are important caveats when using digital spatial data in the geographic information system (GIS) environment in which scale is easily manipulated.

Products

This report provides comprehensive documentation of the results of the survey. The content, including maps, tables, and descriptions, is derived dominantly from spatial data and associated attribute data. These include the following:

1. Soil Survey Geographic Database (SSURGO) dataset and standard products of the National Cooperative Soil Survey (NCSS) for the Yukon-Charley Rivers National Preserve, which includes:
 - Project area boundary as provided by the National Park Service
 - Soil map unit polygons (developed and certified at a scale of 1:63,360)
 - Attribute database (aggregate data exported from the National Soil Information System [NASIS]) linked to map unit polygons with Map Unit Key (MUKEY). (See documentation in metadata and system reports in attribute database.)
 - Metadata
2. Other spatial layers, including special themes and orthophotographic images
3. PEDON_PC and AKVEG databases of point data collected during the survey, including:
 - Soils and vegetation field data collected at 922 sample points
 - Links to SSURGO data with MUKEY and soil component code (See documentation in database.)
4. Digital photographs, landscape illustrations, and map unit distribution maps

All products of this survey are available at the following locations:

- National Park Service, Yukon-Charley Rivers National Preserve Headquarters
- National Park Service, Regional Office, Anchorage, Alaska
- Natural Resources Conservation Service, Palmer, Alaska

Survey Methods

The Natural Resources Conservation Service (NRCS) developed inventory objectives and procedures in conjunction with potential National Park Service (NPS) users and then developed a Memorandum of Understanding. The map base for the detailed soil maps is color infrared orthophotography at a scale of 1:63,360. This mosaic of aerial imagery was completed in 2007. The MLRA map for Alaska and the ecological subsection map by Swanson (Swanson, 2001) served as primary references for understanding general soil-landform and soil-vegetation relationships of the survey area as well as for use as a planning tool for fieldwork. Aerial imagery was used to estimate the distribution and extent of landforms and vegetation patterns at the scale of 1:63,360. Other information on climate, geology, geomorphology, hydrology, and vegetation was used in the refinement of the map units and soil components and in development of the ecological site concepts. A geographic area of approximately 343,995 hectares was mapped each year. Using the recent aerial photography and derived digital elevation model data and GIS as well as the more traditional stereoscopic mapping methods, tentative map units (polygons) were delineated on mylar overlays of the aerial photography. Initial map unit assignments were made based on apparent landform and vegetation patterns.

Representative map units were then selected for field evaluation and documentation of soil and vegetation conditions. Two teams transected several tentative map units each day using the line intercept method. This approach minimized expense and

helicopter activity in the survey area while providing supporting documentation for mapping. Field documentation includes 243 transects and 922 stops. Observations include major soil types and associated landforms, site properties, and plant communities. Each transect consisted of one to several stops in an individual map unit. The number of stops was determined by the complexity of the map unit. Corresponding soils and vegetation data and other notes were linked using the transect and stop numbers. All transect and stop locations were recorded with a global positioning system (GPS) and referenced during map preparation and data analysis. During the fieldwork, draft maps were evaluated for accuracy of line placement and map unit assignments. Samples of some of the soils in the area were collected for laboratory analyses. Laboratory data, together with the observed soil characteristics and properties, were used to determine baseline soil properties.

Following each field season, data were entered into the PEDON_PC and AKVEG databases for management and analysis. Polygons from draft field mapping on aerial high altitude photographs were then transferred to overlays of the orthophotography, scanned, and digitized. A re-evaluation of the draft field mapping was completed using the orthophotography and a geographic information system (GIS) and the documented field data. Results of the data analysis were entered into the standard NASIS database.

General Nature of the Survey Area

The survey area extends from about latitude 64°29' to 65°38' N and longitude 141°01' to 144°02' W. The area is only accessible by boat or aircraft. Just south of the survey area, the Taylor Highway terminates in Eagle, Alaska (NPS headquarters for Yukon-Charley Rivers National Preserve). From Eagle, it is about 19 river kilometers to the southern boundary of the preserve. East-northeast of the preserve is the terminus of the Steese Highway, which is 259 kilometers east of Fairbanks, at Circle, Alaska. Coal Creek and Three Finger Charley provide bush strips for access to the preserve.

Major tributaries include the Charley, Kandik, Seventymile, Tatonduk, and Nation Rivers, all of which flow into the Yukon River. The Yukon River flows southeast-to-northwest through the preserve, at about 13 kilometers per hour. It flows between valley walls that range from steep bluffs to terraces, which is representative of several stages of river downcutting.

Glaciation in the survey area was confined mainly to the upper valley channels and cirque basins, leaving many areas free of ice. Glacier coverage occurred during the Pleistocene, the Illinoian, and the less extensive Wisconsin glacial limits. Fire is the major ecological disturbance on the uplands in the survey area. Episodic large- and small-scale wildland fires burn across the area, caused mainly by lightning strikes. Flooding is common along the streams and rivers, and this natural disturbance influences plant community development.

Climate

The climate of Interior Alaska is subarctic continental and is characterized by long, exceptionally cold winters and short, warm summers. The mean temperature in January is -12.5 degrees F at Eagle (south of the preserve and outside of the survey area) (table 1). Daily low temperatures of -50 degrees or lower occur frequently in winter. Periods of severe cold weather that last 2 weeks or longer are common. The mean temperature in July is 60 degrees at Eagle. Daily high temperatures in summer occasionally exceed 80 degrees. The daily minimum temperature in summer generally is 40 to 45 degrees; however, freezing temperatures have been recorded in every month. The autumn freeze usually occurs in September, and the spring thaw normally occurs late in May or early in June. The mean annual precipitation at Eagle is

12 inches, and the average annual snowfall is 59 inches (table 2). The maximum rainfall occurs late in summer, mainly as a result of thunderstorms. Because of the low precipitation, the amount of water available for weathering and translocation of soil minerals is minimal and soil horizon expression generally is weak or moderate.

Physiography

The survey area is in two MLRAs, 231—Interior Alaska Highlands and 232—Yukon Flats Lowlands. The MLRAs are described in the section “General Resource Descriptions.” Most of the preserve is in MLRA 231 (USDA, 2006). Only about 26,103 hectares is in MLRA 232, which is in the far northwestern part of the preserve, south of the Yukon River.

Elevation ranges from about 183 meters along the Yukon River to about 2,134 meters in the upper Charley River headwaters area. The Tintina Fault divides the preserve into two distinct geologic areas. It is a strike-slip fault that runs parallel to the Yukon River corridor, about 9.7 to 19.3 kilometers south of the river. The fault is one of the great fault systems in western North America, extending about 966 kilometers from northeastern British Columbia into Alaska. Northeast of the Tintina Fault is a triangular area that is formed by the Nation and Yukon Rivers and the Canadian border and has a high diversity of bedrock. This area is the only portion of east-central Alaska thought to be part of the original North American plate, and it is comprised of a sequence of unmetamorphosed sediment (Precambrian, Cambrian, Ordovician, Silurian, Devonian, and Mississippian). This sedimentary rock was once part of a continental margin and contains a record of marine faunal evolution that includes ammonites, trilobites, brachiopods, and coral. The oldest known microfossils from northwestern North America are also in this triangular area. The area southwest of the Tintina Fault is a sequence of complex igneous rock, metasedimentary rock, and volcanic rock. This rock probably was metamorphosed and reformed when several small plates collided to form Alaska during the Cretaceous.

Peat and other organic deposits are in minor areas in depressions on flood plains, terraces, and loess plains. These areas have a surface organic mat that is several centimeters thick to peat deposits in bogs, fens, and wet meadows that are several meters thick. Ice-cored organic mounds are on terraces and pond margins in the preserve. A mantle of silty loess, which originated from nonvegetated flood plains in and adjacent to the area, covers many surfaces. Most of the loess was deposited rapidly at the end of the last glaciation, when receding glaciers left large areas of ground exposed to wind. Common miscellaneous areas include surface bedrock, talus slopes, riverwash, and surface water. Placer mine tailings are still in drainageways in the preserve, mainly in Coal Creek and Woodchopper Creek drainageways. The soils in the survey area have a gelic or cryic soil temperature regime; an aquic, udic, or ustic soil moisture regime, and mixed mineralogy.

Permafrost

This survey area is in a zone of discontinuous permafrost (Péwé, 1975). Permafrost is extensive in the loamy soils within the boreal biome and is only in some areas of gravelly alpine soils. Commonly, landscapes underlain by permafrost support open dwarf spruce forest or woodland and the trees are tipped in various directions as a result of frost heave. Isolated masses of ground ice are in deep loess deposits on terraces and lower side slopes of hills. Permafrost generally is not present on active flood plains or south-facing slopes of steep mountains. Commonly, Gelisols are shallow to moderately deep over permafrost and are poorly drained or very poorly drained. Wildfires can disturb the insulating organic surface material, lowering the permafrost table and eliminating the perched water table from the Gelisols, thus

changing the classification. The short-term impact of most wildfires is warming of the permafrost and an increase in the thickness of the active layer, which is the upper part of the soils that thaws in summer. As the permafrost thaws, a large volume of water either accumulates in depressions or runs off through surface or subsurface drainage outlets. Differential subsidence of the soil surface and slumping on steeper slopes can occur, depending on the ice content of the permafrost and the rate of thawing. Depending on fire frequency, landform position, and particle size, these soils might or might not revert back to Gelisols. Evidence of fire, such as charcoal, is common in the soils.

The mean annual air temperature at Eagle, Alaska, is less than about -4 degrees C (25 degrees F). Permafrost occurs in a large percentage of the landscape, and it typically is in areas on terraces, loess plains, toeslopes and footslopes of hills and mountains, depressions, and some moderately sloping to steep backslopes of hills and mountains (especially on north aspects) that have a thick organic mat. The depth at which permafrost occurs and the ice content vary widely. In most places, small crystals and thin veins of ice are disseminated throughout the soil. On gently sloping summits of hills or mountains, terraces, loess plains, and alluvial fans, the permafrost restricts drainage, resulting in a perched water table and saturated conditions. Peat mounds typically have permafrost at a shallow depth and a core of massive ice. The surface peat commonly is well drained and relatively dry.

Wildlife

Approximately 39 species of mammals, 169 species of birds, 18 species of fish, and more than 880 species of vascular plants are known to inhabit the Yukon-Charley Rivers National Preserve. Fortymile caribou use the area in spring and fall each year. Moose have a small, but stable, presence in the preserve. Black bear and grizzly bear inhabit the area. Black bear intensively use the boreal forest or woodland, and grizzly bear are throughout the boreal and alpine/subalpine zones. Approximately 14 species of other furbearers are in the survey area, including coyote, red fox, marten, mink, lynx, marmot, muskrat, and beaver. Snowshoe hare and porcupine are common and can cause considerable damage to trees. Wolves are throughout the area, commonly following the migrating caribou herd. Dall sheep inhabit the high elevation mountains that consist dominantly of frost-shattered bedrock.

Many of the bird species are spring and fall migrants to the area. Numerous species of waterfowl, including tundra swan and sandhill crane, use the lakes and ponds in the area. Along the Yukon River is the largest area of nesting habitat in North America for American peregrine falcon. Spruce grouse are common in the spruce forests throughout the area. Year-round residents include raven and ptarmigan.

Arctic grayling use the tannic-stained tributaries throughout the area for spawning. Annual summer runs of Chinook and chum salmon are in the middle Yukon River.

Recreation

The preserve provides excellent remote and backcountry recreational opportunities, including flatwater and whitewater boating; camping; sheep, moose, and caribou hunting; fishing; wildlife viewing; and hiking. Many visitors float the Yukon River in summer and snow machine or dog mush the river in winter. Each winter, mushers in the Yukon Quest International Sled Dog Race travel through the preserve, traversing the Yukon River. In summer, adventurous visitors enjoy the more than 161 kilometers of clear, cold whitewater of the Charley River. The preserve has seven public use cabins that are available on a first-come, first-served basis. The historic cabins are named Nation Bluff, Glenn Creek, Kandik River, Slaven's Roadhouse, Slaven's, Coal Creek Camp, and Smith. The Slaven's Roadhouse, built in the 1930's, is the only remaining example of the historic roadhouses that served as stopovers for weary

travelers and mail carriers along the Yukon River route. Coal Creek Dredge can be reached by walking 1 mile up from Slaven's Roadhouse. About 3 kilometers below Washington Creek is an old steam tractor artifact.

General Resource Descriptions

Two general physiographic/ecological maps are used to group the resources in the Yukon-Charley Rivers National Preserve Area—the NRCS major land resource area map and the Unified Ecoregions Map of Alaska (Nowacki and others, 2001).

The major land resource areas (MLRAs) are geographically associated land resource units (LRUs). Identification of these large areas is important in statewide agricultural planning and in interstate, regional, and National planning. The criteria for these units are based heavily on agricultural use and management. Soil map units are unique to an MLRA. Most of the preserve is in MLRA 231, and a small part is in MLRA 232. Complete descriptions of the MLRAs of the United States and a comparison of the various physiographic maps are available in the USDA Agriculture Handbook (USDA, 2006).

The Unified Ecoregions Map of Alaska combines the Bailey and Omernik approaches to ecoregion mapping (Bailey and others, 1994; Cleland and others, 1997). The ecoregions were developed cooperatively by the Forest Service, National Park Service, U.S. Geological Survey, Nature Conservancy, and personnel from many other agencies and private organizations. Ecoregions are large areas that have similar climate and in which ecosystems recur in predictable patterns. The ecoregions hierarchy provides resources and education on the origins of these patterns and their relevance to sustainable design and planning. The Unified Ecoregions Map of Alaska includes the upper levels in the ecological hierarchy down to the section level. This map is available online at <http://agdc.usgs.gov/data/usgs/erosafo/ecoreg/index.html>. Swanson provides another level of detail, called subsections, to the ecoregions map (Swanson, 2001). This subsection map is included in this section. It provides the basic framework for the next level of resolution in the hierarchy, which is landtype associations ([fig. 2](#)). Landtype associations are synonymous with the detailed soil map units in this report.

The map units have been incorporated into the MLRA map and the ecoregions subsection map. The MLRA for each map unit is given in the section “Detailed Soil Map Units.” The complete ecoregions hierarchy for the Yukon-Charley Rivers National Preserve Area is in [table 3](#).

MLRAs and Associated Map Units



Figure 1.—Yukon-Charley Rivers National Preserve (outlined in red) with respect to MLRAs 231 and 232. The blue outlined areas represent all of the MLRAs within Land Resource Region X1—Interior Alaska.

MLRA 231—Interior Alaska Highlands

Physiography and Geology

Landforms include hills, low to moderately high mountains, and valleys (fig. 1). The mountains and hills are mantled with gravelly colluvium and slope alluvium originating from the underlying bedrock. The valley bottoms are filled with Holocene fluvial deposits and slope alluvium from adjacent mountain slopes. Periglacial features, such as pingos, thermokarst pits and mounds, ice-wedge polygons, and earth hummocks, are on the lower slopes and in upland valleys, particularly in the Davidson Mountains, in the northwestern part of the area. A mantle of silty loess, which originated from nonvegetated flood plains in and adjacent to the area, covers many surfaces. On the low hills near major river valleys, the loess is meters thick. On the high ridges, the loess is less than about 30 centimeters thick. The highest ridges have exposed bedrock. The dominant types of bedrock include Paleozoic sedimentary rock and Permian through Jurassic igneous rock in the northeast, Permian and lower Cretaceous sedimentary and metamorphic rock in the east, and Precambrian and

Paleozoic metamorphic and sedimentary rock with some Cretaceous intrusive rock in the southwest and west.

Climate

The average annual precipitation is less than 255 millimeters (10 inches) on the valley bottoms and lowlands in the northeastern part of the area and 510 to 1,015 millimeters (20 to 40 inches) at the higher elevations. The maximum rainfall occurs late in summer, mainly as a result of thunderstorms. Short, warm summers and long, cold winters characterize the subarctic continental climate of the area. The average annual snowfall ranges from about 115 to 255 centimeters (45 to 100 inches). The average annual temperature is about -12 to -9 degrees C (10 to 16 degrees F) in the northern part of the area and -7 to -4 degrees C (20 to 25 degrees F) in the southern part. The frost-free period at the lower elevations averages about 60 to 100 days, and the temperature usually remains above freezing from June through mid-September.

Elevation

Elevation ranges from about 125 meters (400 feet) in the west, along the boundary with the Interior Alaska Lowlands (MLRA 229), to 2,007 meters (6,583 feet) at the summit of Mount Harper, in the southeast.

Soils

The dominant soil orders in this MLRA are Gelisols, Inceptisols, Entisols, and Spodosols. Within the boreal life zone, soils have a subgelic soil temperature class or cryic soil temperature regime, an aquic or udic soil moisture regime, and mixed mineralogy. Many of the soils have a significant content of mica derived from micaceous parent material. Gelic subgroups of Inceptisols, Mollisols, and Entisols are common throughout the alpine life zone.

Vegetation/Land Cover

This area is forested below an elevation of about 550 to 610 meters (1,800 to 2,000 feet). White spruce, paper birch, quaking aspen, and mixed forests cover most of the slopes. White spruce forests and mixed white spruce-balsam poplar forests are common on the high flood plains and low terraces. Black spruce woodland is on the steep, north-facing slopes, on the high stream terraces, and in other areas that have poor drainage and permafrost at a shallow depth. Tussock-forming sedges commonly are dominant in the ground layer. Low to tall willow and alder scrub are extensive on the low flood plains. Lightning-caused wildfires are common, often burning many thousands of hectares during a single fire.

Permafrost

The area is within the zone of discontinuous permafrost. Permafrost commonly is close to the surface in the finer-textured sediment throughout the MLRA and is especially prevalent on the north aspects, broad mountain summits, and footslopes and toeslopes of hills and mountains. Isolated masses of ground ice are in thick deposits of loess on terraces and the lower side slopes of hills. Permafrost generally does not occur on the low flood plains and south-facing slopes of steep mountains. Fire has a profound effect on the presence of permafrost at a shallow depth throughout the MLRA.

Soil Map Units (Landtype Associations)

D31BH1—Boreal Sedimentary Hills
D31BH2—Boreal Dark Sedimentary Escarpments
D31BH3—Boreal Hills with Common Permafrost
D31BH5—Boreal Valley Bottoms
D31BH6—Boreal Escarpments
D31BH7—Boreal and Subalpine Hills with Common Permafrost
D31CF1—Boreal and Subalpine Hills with Extensive Permafrost
D31HL1—Boreal Eolian Hills with Common Permafrost
D31HL2—Boreal Eolian Hills with Extensive Permafrost
D31KT1—Boreal Eolian Plains with Extensive Permafrost, Wet
D31LB1—Boreal Hills with Common Permafrost, Thin Surface
D31LB2—Boreal Hills with Common Permafrost, Steep
D31MT1—Alpine Granitic Mountains, Dry
D31MT2—Alpine Granitic Mountains
D31MT3—Alpine Rounded Mountains with Common Permafrost
D31OF1—Boreal Hills with Common Permafrost, Nonacid
D31OM1—Alpine Angular Mountains
D31OM2—Alpine Lower Mountain Slopes
D31SD1—Alpine Rounded Mountains with Extensive Permafrost
D31TE1—Boreal Eolian Terraces with Extensive Permafrost
D31TE2—Boreal Terraces with Extensive Permafrost, Wet
D31TF1—Subalpine Hills
D31TF2—Subalpine Glaciated Hills
D31TH1—Boreal Hills with Extensive Permafrost
D31TL1—Boreal Eolian Plains with Extensive Permafrost, Moist
D31UC1—Boreal Eolian Hills with Common Permafrost, Wet
D31UC2—Subalpine and Boreal Hills
D31UC3—Boreal Plains with Extensive Permafrost
D31UC4—Boreal Flood Plains with Common Permafrost
D31UC5—Alpine Glaciated Mountains
D31WA1—Alpine and Subalpine Water
D31YV1—Boreal Flood Plains, Wet
D31YV2—Boreal Terraces and Flood Plains with Common Permafrost
D31YV3—Boreal Terraces with Extensive Permafrost
D31YV8—Boreal Low Flood Plains
D31YV9—Boreal High Flood Plains

MLRA 232—Yukon Flats Lowlands

Physiography and Geology

This area consists of a broad expanse of lowlands and low hills adjacent to the middle reaches of the Yukon River, known locally as the Yukon Flats ([fig. 1](#)). The area is within the Northern Uplands and Lowlands physiographic province of the Intermontane Uplands and Lowlands system (Wahrhaftig, 1965). The terrain of this MLRA consists primarily of a marshy complex of nearly level to undulating stream terraces and flood plains adjacent to the Yukon River. Thousands of lakes, ponds, and interconnecting wetlands fill depressions, shallow basins, and abandoned river channels across the stream terraces. Flood plain features include multiple channels and islands, meander scars, oxbow lakes, sloughs, and low escarpments. The Yukon Flats Lowlands is a broad, intermontane, tectonic basin filled with Quaternary and earlier glaciofluvial and fluvial sediment. In the central part of the basin, the glaciofluvial and fluvial deposits are underlain by lacustrine sediment. The unconsolidated sediment is estimated to be 90 to 120 meters (300 to 400 feet) thick or

more near the center of the basin. Along the edge of the basin, much of the landscape is mantled with a thick layer of silty loess of the Pleistocene and Holocene. Sand dunes cover some areas. Fluvial and eolian sediment is continuously being deposited. The underlying bedrock is completely buried by unconsolidated sediment.

Climate

Short, warm summers and long, very cold winters characterize the subarctic continental climate of the area. The surrounding hills and mountains partially isolate this MLRA from weather systems affecting other interior lowlands. This results in temperatures that are generally warmer in summer and colder in winter than other areas at comparable latitude. The average annual precipitation ranges from about 152 millimeters (6 inches) in the central basin to 381 millimeters (15 inches) along the boundary with surrounding highlands. The maximum precipitation occurs late in summer, mainly as a result of thunderstorms. The average annual snowfall is about 114 to 140 centimeters (45 to 55 inches). The average annual temperature ranges from about -6.6 to -3.8 degrees C (20 to 25 degrees F). The average frost-free period is 70 to 120 days. The temperature commonly remains above freezing from early in June through late in August.

Elevation

Elevation ranges from about 91 meters (300 feet) to about 305 meters (1,000 feet).

Soils

The dominant soil orders in this MLRA are Gelisols, Inceptisols, and Entisols. Gelisols have a subgelic soil temperature class or cryic soil temperature regime, an aquic or udic soil moisture regime, and mixed mineralogy. Many of the soils have a significant content of secondary calcium carbonate.

Vegetation/Land Cover

Vegetation on the productive, well drained, upland soils includes white spruce, paper birch, quaking aspen, and mixed white spruce-paper birch-quaking aspen forests. Balsam poplar and mixed white spruce-hardwood forests are on the high flood plains and low stream terraces. Stunted black spruce and low-producing white spruce woodland is on the high stream terraces and in cold, wet areas that have permafrost at a shallow depth. Tussock-forming sedges and moss commonly are dominant in the ground cover. Paper birch and, in places, tamarack are in association with spruce on permafrost flats. Lightning-caused wildfires are common, often burning many thousands of hectares during a single fire. Following wildfires, willow, shrub birch, and ericaceous scrub invade most sites and are eventually replaced by forest vegetation. On all forest and woodland sites, the post-fire succession results in a relatively rapid accumulation of organic matter and moss on the surface. This leads to a decrease in soil temperature, biologic activity, nutrient availability, and site productivity. Tall and low scrub that consists dominantly of willow and alder are common on the low flood plains. Vegetation in the wettest areas is dominantly tall to low alder and willow scrub, sedge-shrub meadows, sedge meadows, and sedge-moss bog meadows.

Permafrost

The area is within the zone of discontinuous permafrost (Péwé, 1975). Permafrost is extensive throughout the MLRA, except on the low flood plains. Fire has a profound effect on the distribution of permafrost near the surface.

Soil Map Units (Landtype Associations)

D32TL1—Boreal Eolian Plains with Common Permafrost

D32TL2—Boreal Escarpments with Common Permafrost

D32TL4—Boreal Eolian Plains with Extensive Permafrost

**Ecoregion Subsections and Associated Map Units
(Landtype Associations)**

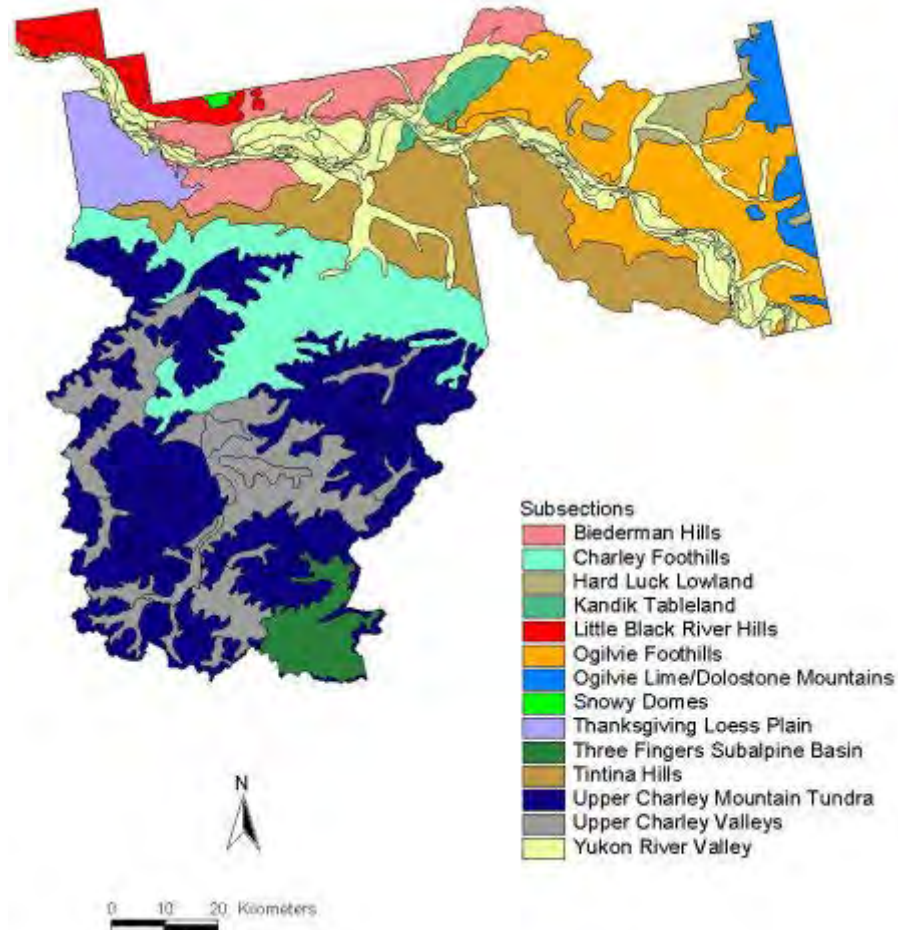


Figure 2.—Ecoregions subsection map of the Yukon-Charley Rivers National Preserve (Swanson, 2001).

Biederman Hills Subsection



Geology and physiography: Moderately steep, forested hills and steep, south-facing bluffs composed of sedimentary rock (mostly argillite), dominantly north of the Yukon River

Elevation: 244 to 853 meters (800 to 2,800 feet)

Soils: Dominantly dry and rocky soils derived from bedrock and colluvium on south-facing slopes; wetter soils with permafrost on north-facing slopes and lower lying slopes

Vegetation/land cover: Dominantly paper birch forest in burned areas and mixed birch and white spruce forest in unburned areas; black spruce forest on some north-facing slopes and lower lying slopes; primarily steppe sparsely vegetated areas, scree, and exposed rock on south-facing slopes

Fire history: Major burns in 1950 and 1986

Soil map units (landtype associations):

D31BH1—Boreal Sedimentary Hills

D31BH2—Boreal Dark Sedimentary Escarpments

D31BH3—Boreal Hills with Common Permafrost

D31BH5—Boreal Valley Bottoms

D31BH6—Boreal Escarpments

D31BH7—Boreal and Subalpine Hills with Common Permafrost

Charley Foothills Subsection



Geology and physiography: Hills and low mountains composed of granitic and metamorphic rock, south of the Yukon River

Elevation: 488 to 1,158 meters (1,600 to 3,800 feet)

Soils: Dominantly dry and rocky soils derived from bedrock and colluvium on upper slopes and south-facing slopes; wetter soils with permafrost on north-facing slopes and nearly level summits

Vegetation/land cover: Dominantly sparse spruce forest, but paper birch forest on south-facing slopes and sedge tussocks or low shrubs on summits

Fire history: Fire in 1991 largely confined to this subsection; other fires in 1950, 1969, and 1993; in some areas, no recorded burns and vegetation appears to be late-successional (dominantly spruce)

Soil map unit (landtype association):

D31CF1—Boreal and Subalpine Hills with Extensive Permafrost

Hard Luck Lowland Subsection



Geology and physiography: Gently sloping basins with soft (Cretaceous and Tertiary) sandstone, mudstone, and conglomerate covered with loess, north of the Yukon River, near the Ogilvie Mountains

Elevation: 305 to 914 meters (1,000 to 3,000 feet)

Soils: Dominantly wet and fine grained; in burned areas, permafrost has receded a few meters below the surface and soils are drier

Vegetation/land cover: Dominantly tussock wetland and black spruce woodland

Fire history: The southern half of the Hard Luck Lowland apparently burned in 1957 and 1967. Exact boundaries of the 1967 fire are not available, so the extent of the overlap is not known. The northern half of the lowland has no recorded fires and appears (on photographs) to be at an advanced successional stage.

Soil map units (landtype associations):

D31HL1—Boreal Eolian Hills with Common Permafrost

D31HL2—Boreal Eolian Hills with Extensive Permafrost

Kandik Tableland Subsection



Geology and physiography: Gently sloping areas dissected on the surface by small streams and composed of Cretaceous argillite; dominantly north of the Yukon River

Elevation: 305 to 655 meters (1,000 to 2,150 feet)

Soils: Dominantly wet, fine grained soils with permafrost, but permafrost has receded in some areas to several meters below the surface as a result of fire; drier, rocky soils without permafrost on steeper slopes

Vegetation/land cover: Dominantly sparse black spruce forest; birch forest on steeper slopes, especially in burned areas

Fire history: Fires occurred in 1950 and 1969. Examination of aerial photographs suggests that the 1950 fire was more extensive than indicated by the fire map overlay. Only the far northeastern part of this subsection appears to have been unaffected by fire for a significant period of time.

Soil map unit (landtype association):

D31KT1—Boreal Eolian Plains with Extensive Permafrost, Wet

Little Black River Hills Subsection



Geology and physiography: Gently sloping forested hills and south- and west-facing slopes composed of Paleozoic and older sedimentary rock with a cover of loess in some areas; north of the Yukon River

Elevation: 213 to 792 meters (700 to 2,600 feet)

Soils: Vary greatly according to fire succession and slope position. Unburned areas appear to have rather wet soils with permafrost, except on hill crests. In burned areas, the permafrost has receded a few meters below the surface and the soils are drier. The soils on bluffs are dry and rocky.

Vegetation/land cover: Dominantly scrub in the extensive 1986 burn area; in other burned areas, dominantly black spruce forest with paper birch forest, especially on steeper slopes

Fire history: Burned in 1954, 1977, and 1986. Areas without recorded burns and that support what appears on aerial photographs to be late-successional vegetation (dominantly spruce) are just north of the 1986 burn area.

Soil map units (landtype associations):

D31LB1—Boreal Hills with Common Permafrost, Thin Surface

D31LB2—Boreal Hills with Common Permafrost, Steep

Ogilvie Foothills Subsection



Geology and physiography: Steep, forested hills composed of complexly folded and faulted, hard sedimentary rock

Elevation: 244 to 1,158 meters (800 to 3,800 feet)

Soils: Dry, rocky soils derived from bedrock and colluvium

Vegetation/land cover: Paper birch (especially in burned areas), spruce, and aspen forest with some rock rubble on slopes; sparse vegetation in steppe areas and in areas of scree and exposed rock

Fire history: Burned in 1969 and 1971; some areas have no recorded burns and support what appears on aerial photographs to be late-successional vegetation (dominantly spruce)

Soil map unit (landtype association):

D31OF1—Boreal Hills with Common Permafrost, Nonacid

Ogilvie Lime/Dolostone Mountains Subsection



Geology and physiography: Steep mountains with cliffs and sharp ridgelines; composed of limestone, dolostone, and other sedimentary rock

Elevation: 610 to 1,463 meters (2,000 to 4,800 feet)

Soils: Dry, rocky soils derived from bedrock and colluvium

Vegetation/land cover: Sparse vegetation and some rock rubble and bedrock exposed at the surface on ridges; dry, herbaceous vegetation or shrubs on slopes; and birch and spruce forest at low elevations

Fire history: Most areas burned during period of record, which began in the 1950's; small area might have burned in 1996

Soil map units (landtype associations):

D31OM1—Alpine Angular Mountains

D31OM2—Alpine Lower Mountain Slopes

Snowy Domes Subsection



Geology and physiography: Steep, but generally rounded, mountains composed of sedimentary rock (conglomerate); north of the Yukon River and dominantly above the treeline

Elevation: 792 to 975 meters (2,600 to 3,200 feet)

Soils: Dry, rocky soils derived from bedrock and colluvium; probably some wet soils with permafrost in areas that support tussocks

Vegetation/land cover: Dominantly low or dwarf shrub and tussock tundra; some spruce woodland near the treeline

Fire history: Fire in 1986 probably affected the area near the treeline; little fuel present to sustain fire above the treeline

Soil map unit (landtype association):

D31SD1–Alpine Rounded Mountains with Extensive Permafrost

Thanksgiving Loess Plain Subsection



Geology and physiography: Gently sloping plains with thick cover of loess; some steep slopes in areas that have been dissected by small streams south of the Yukon River, in the far northwestern corner of the preserve

Elevation: 305 to 610 meters (1,000 to 2,000 feet)

Soils: Dominantly wet, fine grained soils with permafrost in unburned areas; in burned areas soils are drier and permafrost may have receded to several meters below the surface; drier soils on steep slopes near streams

Vegetation/land cover: Dominantly open black spruce forest in unburned areas and birch forest or bog birch scrub in burned areas; birch forest on steep slopes in unburned areas

Fire history: Portions burned in 1957, 1993, and 1996. Areas that have no recorded fires appear on aerial photographs to be at an advanced successional stage.

Soil map units (landtype associations):

D32TL1—Boreal Eolian Plains with Common Permafrost

D32TL2—Boreal Escarpments with Common Permafrost

D32TL4—Boreal Eolian Plains with Extensive Permafrost

Three Fingers Subalpine Basin Subsection



Geology and physiography: Hills composed of granitic rock and schist; near the treeline in the upper Charley River area

Elevation: 914 to 1,280 meters (3,000 to 4,200 feet)

Soils: Derived from weathered bedrock and colluvium and have a surface layer of peat in low areas. Soils in lowlands are wet and have permafrost, and soils on higher slopes are dry and rocky.

Vegetation/land cover: Dominantly sedges (tussocks) and low shrubs in low areas, shrubs with a few trees on higher slopes, and herbaceous vegetation or dwarf shrubs on hilltops

Fire history: No recorded fires. Vegetation has relatively low flammability, and no obvious fire scars were seen on aerial photographs.

Soil map units (landtype associations):

D31TF1—Subalpine Hills

D31TF2—Subalpine Glaciated Hills

Tintina Hills Subsection



Geology and physiography: Relatively gently sloping forested hills composed of soft sandstone, mudstone, and conglomerate; south of the Yukon River

Elevation: 305 to 762 meters (1,000 to 2,500 feet)

Soils: Dominantly dry, rocky soils derived from bedrock and colluvium on upper slopes and south-facing slopes; wetter soils with permafrost on north-facing slopes and lower slopes

Vegetation/land cover: Dominantly paper birch forest in burned areas and mixed birch and white spruce forest in unburned areas; black spruce forest on some north-facing slopes and lower slopes

Fire history: A small portion of this subsection burned in 1950 and most of it burned in 1969. Areas that have no recorded burns and support what appears on aerial photographs to be late-successional vegetation (dominantly spruce) are in the far western and far eastern parts.

Soil map unit (landtype association):

D31TH1—Boreal Hills with Extensive Permafrost

Upper Charley Mountain Tundra Subsection



Geology and physiography: Steep mountains with cliffs, sharp ridgelines, and cirques; composed of granitic rock and schist; above the treeline in the upper Charley River area

Elevation: 792 to 2,012 meters (2,600 to 6,600 feet)

Soils: Dry, rocky soils derived from bedrock and colluvium above 1,463 meters (4,800 feet); some finer grained, wetter soils with permafrost near the surface in gently sloping, concave areas below 1,463 meters

Vegetation/land cover: Sparsely vegetated with considerable rock rubble and bedrock exposed at the surface of cliffs and patches of herbaceous plants or dwarf shrubs in gently sloping areas above 1,463 meters; dominantly shrub vegetation with some tussock tundra with sparsely vegetated areas below 1,463 meters

Fire history: No recorded fires. Almost no fuel present to sustain fires.

Soil map units (landtype associations):

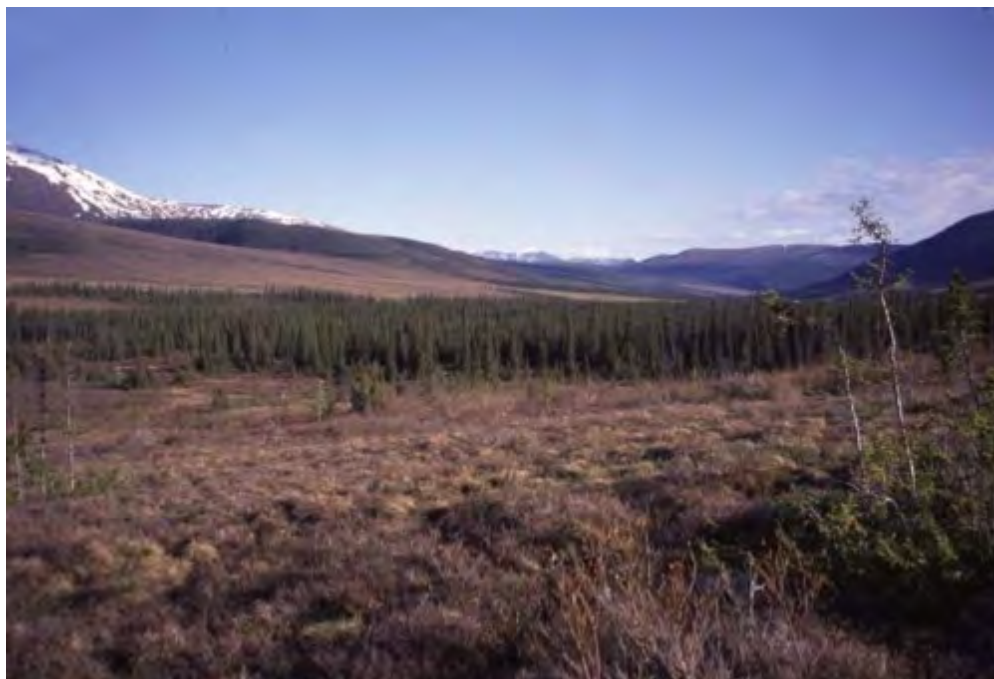
D31MT1–Alpine Granitic Mountains, Dry

D31MT2–Alpine Granitic Mountains

D31MT3–Alpine Rounded Mountains with Common Permafrost

D31WA1–Alpine and Subalpine Water

Upper Charley Valleys Subsection



Geology and physiography: Round-bottomed valleys of mountains composed of granitic rock and schist; near the treeline in the upper Charley River area

Elevation: 549 to 1,219 meters (1,800 to 4,000 feet)

Soils: Derived from weathered bedrock and colluvium and have a surface layer of peat in low areas. Soils in lowlands are wet and have permafrost, and soils in higher areas are dry and rocky.

Vegetation/land cover: Sparse spruce forest on slopes; tussocks and low shrubs in valley bottoms

Fire history: No recorded fires. Vegetation has relatively low flammability, and no obvious fire scars were seen on aerial photographs.

Soil map units (landtype associations):

D31UC1—Boreal Eolian Hills with Common Permafrost, Wet

D31UC2—Subalpine and Boreal Hills

D31UC3—Boreal Plains with Extensive Permafrost

D31UC4—Boreal Flood Plains with Common Permafrost

D31UC5—Alpine Glaciated Mountains

Yukon River Valley Subsection



Geology and physiography: Flood plains, terraces, and islands of the Yukon River

Elevation: 183 to 305 meters (600 to 1,000 feet)

Soils: Soils on flood plains are derived from river deposits of silt, sand, and gravel.

Significant areas are well drained and do not have permafrost. Soils on terraces are derived from river deposits of silt, sand, and gravel and some loess and have a surface layer of peat and extensive permafrost.

Vegetation/land cover: Little vegetation in highly disturbed areas on low flood plains; shrubs, poplar and white spruce forest, and black spruce forest on mid-elevation to high flood plains; sparse spruce forests with sedge bog in depressions on terraces

Fire history: Some areas probably burned in 1969, but most areas are unburned. Area is protected by natural firebreaks (Yukon River and sloughs), and some of the vegetation has inherent low flammability.

Soil map units (landtype associations):

D31YV1—Boreal Flood Plains, Wet

D31YV2—Boreal Terraces and Flood Plains with Common Permafrost

D31YV3—Boreal Terraces with Extensive Permafrost

D31YV8—Boreal Low Flood Plains

D31YV9—Boreal High Flood Plains

D31TE1—Boreal Eolian Terraces with Extensive Permafrost

D31TE2—Boreal Terraces with Extensive Permafrost, Wet

D31TL1—Boreal Eolian Plains with Extensive Permafrost, Moist

Detailed Soil Map Units

The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses, and to plan the management needed for those uses. More information about each map unit is provided in the section “Use and Management of the Soils.”

Each of the delineations on the detailed soil maps has a map unit symbol to indicate the map unit and to link it to the corresponding map unit description. Each of these delineations represents an area on the landscape and consists of one or more soils or miscellaneous areas. A map unit is identified and named according to the order of mapping scale, major land resource area code, and dominant landform code. On the landscape, however, the soils and miscellaneous areas are natural phenomena. They have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of soils or miscellaneous areas and “included” areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They are not mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. All map unit symbols begin with a “D” prefix, which designates them as detailed reconnaissance level units. This letter is followed by a two-digit identifier that corresponds to the last two digits of the MLRA. Since all MLRAs in Alaska begin with “2,” the first digit of the MLRA has been omitted from the map unit symbol. The next two characters signify the ecoregion subsection code. Subsection codes are described in [table 3](#). A map unit designated as “D31BH1” is a detailed reconnaissance level unit in MLRA 231 and ecoregion subsection BH—Beiderman Hills. The final digit of the map unit symbol identifies each unique map unit within the subsection.

Each map unit description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soil components, the building blocks of map units, for this survey area are classified to the taxonomic categories at the family level. Each soil component is assigned to an ecological site. A complete description of the relationship between soils and ecological sites is provided in the section “Ecological Sites.”

Most map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or consociations.

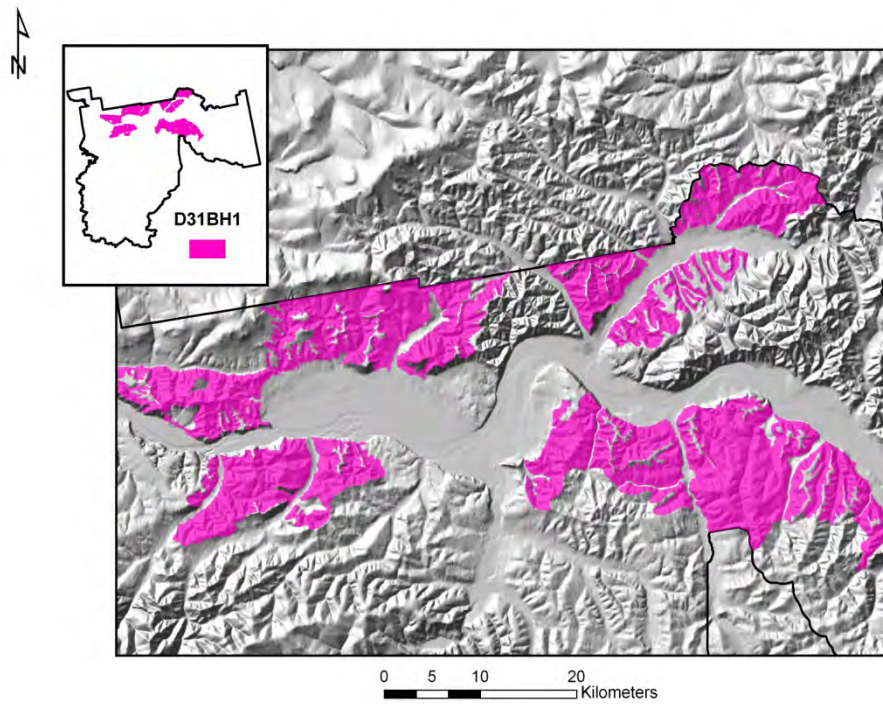
A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. D31BH1—Boreal Sedimentary Hills is an example.

In a *consociation*, delineated areas are dominantly a single soil taxon (or miscellaneous area) and similar soils. As a rule, at least one-half of the pedons in each delineation of a soil consociation are of the same soil component that provided the name for the map unit. D31WA1—Alpine and Subalpine Water is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. D31—Boreal Riverwash is an example.

[Table 4](#) gives the acreage/hectarage and proportionate extent of each map unit. [Table 5](#) lists the ecological site correlated to each map unit component. Other tables give properties of the soils and the limitations, capabilities, and potentials for many uses and the classification and description of the soils. [Plates 1 through 10](#) give additional illustrations of the map units that comprise the majority of the soil survey area. They include a three-dimensional representation of the map unit setting and a photograph of a typical landscape and a soil profile for one of the major components of the map unit. Detailed descriptions of the ecological sites included in the following map unit descriptions are in the section “Ecological Sites.” The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

D31BH1—Boreal Sedimentary Hills



Major land resource area: 231—Interior Alaska Highlands

Elevation: 200 to 1,000 meters

Mean annual precipitation: 244 to 705 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal forest rocky colluvial slopes: 34 percent

D31—Boreal forest rocky sedimentary colluvial slopes: 24 percent

D31—Boreal taiga silty eolian slopes, frozen: 17 percent

Dissimilar minor components: 25 percent

D31—Boreal Forest Rocky Colluvial Slopes

Landform: Hills

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): South

Aspect (range): East to west (clockwise)

Slope range: 15 to 70 percent

Parent material: Organic material over loess over gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Well drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 12.4 centimeters)

Land capability subclass (nonirrigated): 7e

Ecological site: *Picea glauca*-*Betula neoalaskana*/*Alnus viridis* ssp. *fruticosa*-*Rosa acicularis* (F231XY182AK)

Hydric soil status: Not hydric

Hydrologic soil group: A

Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Typical profile:

O—0 to 8 centimeters; slightly decomposed plant material

A—8 to 14 centimeters; silt loam

2Bw—14 to 42 centimeters; very cobbly loam

2C—42 to 152 centimeters; extremely gravelly coarse sandy loam

D31—Boreal Forest Rocky Sedimentary Colluvial Slopes

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): South

Aspect (range): Northeast to southwest (clockwise)

Slope range: 40 to 85 percent

Parent material: Organic material over gravelly colluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 2.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: 2 percent
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 14.2 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: *Picea glauca*-*Populus tremuloides*/*Shepherdia canadensis*-*Rosa acicularis*/*Mertensia paniculata*-*Geocaulon lividum* (F231XY110AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts
Typical profile:
O—0 to 4 centimeters; slightly decomposed plant material
A—4 to 10 centimeters; stony silt loam
Bw—10 to 41 centimeters; very gravelly loam
C—41 to 152 centimeters; extremely gravelly sandy loam

D31—Boreal Taiga Silty Eolian Slopes, Frozen

Landform: Hills
Landform position (two-dimensional): Shoulders
Downslope shape: Linear
Across-slope shape: Linear
Slope range: 1 to 15 percent
Parent material: Organic material over loamy cryoturbate
Depth to restrictive feature: 45 to 90 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 40 to 60 centimeters (perched)
Available water capacity (entire profile): Low (about 10.7 centimeters)
Land capability subclass (nonirrigated): 6s
Ecological site: *Picea mariana*/*Vaccinium vitis-idaea*-*Vaccinium uliginosum* (F231XY111AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic Haploturbels
Typical profile:
Oi—0 to 21 centimeters; slightly decomposed plant material
A—21 to 28 centimeters; silt loam

Cjj—28 to 53 centimeters; silt loam

Cf—53 to 152 centimeters; permanently frozen silt loam

Minor Components

D31—Boreal Taiga Silty Colluvial Slopes, Frozen

Percentage of map unit: 11 percent

Slope: 5 to 50 percent

Landform: Hills

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)

Hydric soil status: Not hydric

D31—Boreal Woodland Silty Eolian Slopes, Frozen

Percentage of map unit: 9 percent

Slope: 10 to 75 percent

Landform: Hills

Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex*
bigelowii (F231XY118AK)

Hydric soil status: Hydric

D31—Boreal Taiga Silty Drainages, Frozen

Percentage of map unit: 5 percent

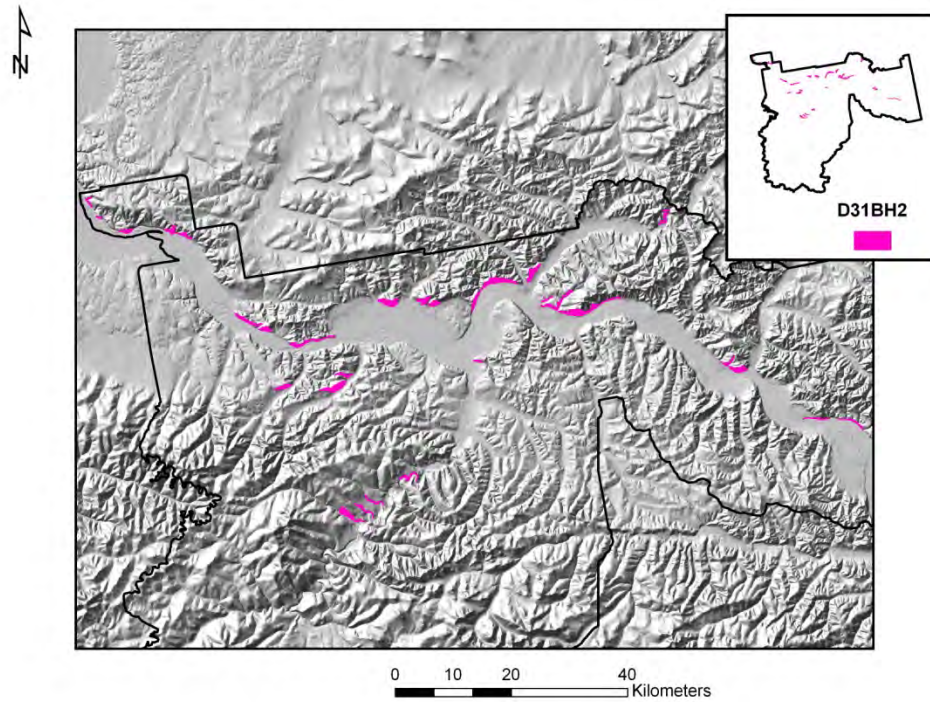
Slope: 1 to 15 percent

Landform: Drainageways

Ecological site: *Picea mariana/Salix-Ledum groenlandicum* (F231XY193AK)

Hydric soil status: Hydric

D31BH2—Boreal Dark Sedimentary Escarpments



Major land resource area: 231—Interior Alaska Highlands

Elevation: 150 to 1,000 meters

Mean annual precipitation: 242 to 688 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal forest rocky sedimentary colluvial slopes: 39 percent

D31—Boreal forest rocky colluvial escarpments: 31 percent

Dissimilar minor components: 30 percent

D31—Boreal Forest Rocky Sedimentary Colluvial Slopes

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): South

Aspect (range): Northeast to southwest (clockwise)

Slope range: 40 to 85 percent

Parent material: Organic material over gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: 2 percent

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Somewhat excessively drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 14.2 centimeters)

Land capability subclass (nonirrigated): 7e

Ecological site: *Picea glauca*-*Populus tremuloides*/*Shepherdia canadensis*-*Rosa acicularis*/*Mertensia paniculata*-*Geocaulon lividum* (F231XY110AK)

Hydric soil status: Not hydric

Hydrologic soil group: A

Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Typical profile:

O—0 to 4 centimeters; slightly decomposed plant material

A—4 to 10 centimeters; stony silt loam

Bw—10 to 41 centimeters; very gravelly loam

C—41 to 152 centimeters; extremely gravelly sandy loam

D31—Boreal Forest Rocky Colluvial Escarpments

Landform: Escarpments

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): South

Aspect (range): Northeast to west (clockwise)

Slope range: 55 to 85 percent

Parent material: Organic material over gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 3.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: 2 percent
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Very low (about 6.9 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: *Picea glauca*-*Populus tremuloides*/*Shepherdia canadensis*-*Rosa acicularis*/*Mertensia paniculata*-*Geocaulon lividum* (F231XY110AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Loamy-skeletal, mixed, superactive Ustic Haplocrypts
Typical profile:
O—0 to 4 centimeters; slightly decomposed plant material
A—4 to 10 centimeters; very flaggy sandy loam
Bw—10 to 43 centimeters; extremely flaggy loam
C—43 to 152 centimeters; extremely channery sandy loam

Minor Components

D31—Boreal Forest Rocky Colluvial Slopes

Percentage of map unit: 12 percent
Slope: 15 to 70 percent
Landform: Hills
Ecological site: *Picea glauca*-*Betula neoalaskana*/*Alnus viridis ssp. fruticosa*-*Rosa acicularis* (F231XY182AK)
Hydric soil status: Not hydric

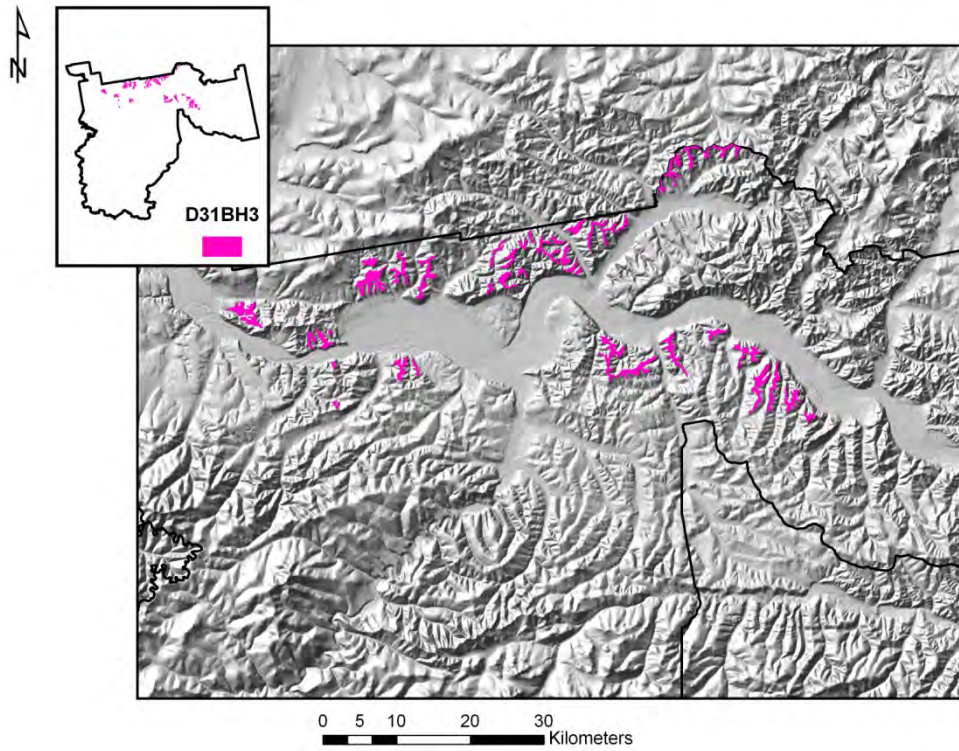
D31—Boreal Scrub Rocky Colluvial Escarpments

Percentage of map unit: 11 percent
Slope: 50 to 100 percent
Landform: Escarpments
Ecological site: Boreal Scrub Gravelly Slopes, Dry (R231XY109AK)
Hydric soil status: Not hydric

D31—Boreal Bedrock

Percentage of map unit: 7 percent
Slope: 60 to 100 percent
Landform: Hills
Ecological site: Boreal Lichen Rock Outcrops Slopes (R231XY120AK)
Hydric soil status: Not hydric

D31BH3—Boreal Hills with Common Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 250 to 900 meters

Mean annual precipitation: 244 to 705 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal taiga silty eolian slopes, frozen: 59 percent

D31—Boreal taiga organic eolian slopes, frozen: 33 percent

Dissimilar minor component: 8 percent

D31—Boreal Taiga Silty Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Shoulders

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over loamy cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 40 to 60 centimeters (perched)

Available water capacity (entire profile): Low (about 10.7 centimeters)

Land capability subclass (nonirrigated): 6s

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic
Haploturbels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 28 centimeters; silt loam

Cjj—28 to 53 centimeters; silt loam

Cf—53 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Organic Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Footslopes, toeslopes

Downslope shape: Concave

Across-slope shape: Linear

Slope range: 1 to 10 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 40 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

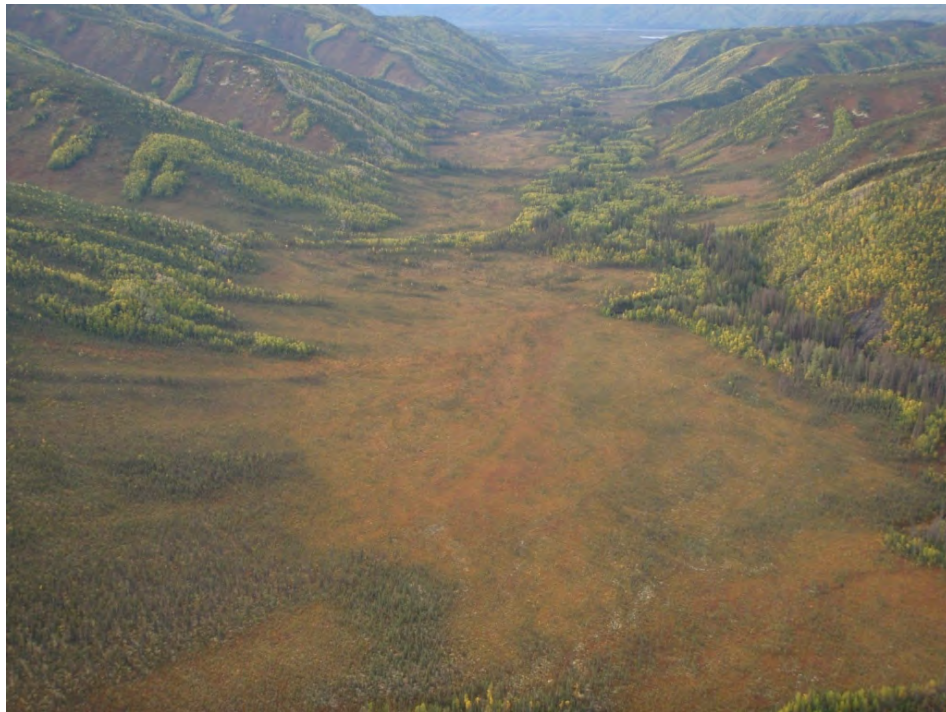
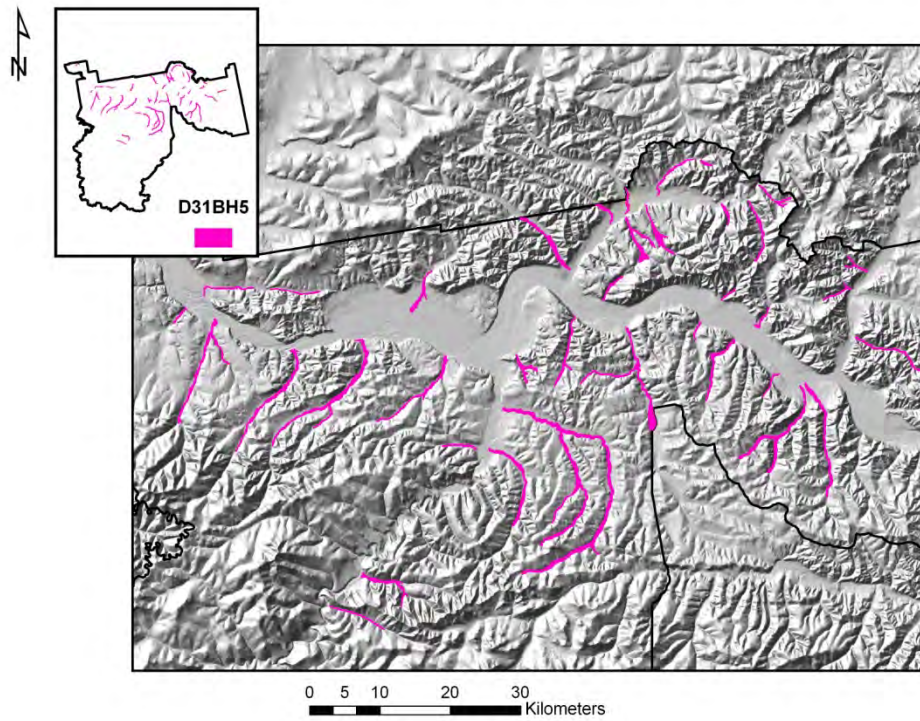
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Very poorly drained
Flooding frequency: None
Ponding frequency: Frequent
Depth to seasonal water table: At the soil surface (perched)
Available water capacity (entire profile): Low (about 9.5 centimeters)
Land capability subclass (nonirrigated): 7s
Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)
Hydric soil status: Hydric
Hydrologic soil group: D
Soil classification: Loamy, mixed, euic, subgelic Terric Fibristsels
Typical profile:
 Oi—0 to 42 centimeters; peat
 Cjj—42 to 48 centimeters; silt loam
 Cf—48 to 152 centimeters; permanently frozen silt loam

Minor Component

D31—Boreal Woodland Gravelly Residual Slopes

Percentage of map unit: 8 percent
Slope: 1 to 15 percent
Landform: Hills
Ecological site: *Picea mariana-Betula neoalaskana/Vaccinium uliginosum/Cladonia* (F231XY162AK)
Hydric soil status: Not hydric

D31BH5—Boreal Valley Bottoms



Major land resource area: 231—Interior Alaska Highlands

Elevation: 100 to 2,000 meters

Mean annual precipitation: 233 to 705 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal taiga/tussock organic terraces, frozen: 36 percent

D31—Boreal forest loamy high flood plains: 28 percent

D31—Boreal scrub rocky drainages: 19 percent

Dissimilar minor components: 17 percent

D31—Boreal Taiga/Tussock Organic Terraces, Frozen

Landform: Terraces

Landform position (three-dimensional): Treads

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 10 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 10.8 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum*
(F231XY169AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 54 centimeters; silt loam

Cjff—54 to 152 centimeters; permanently frozen silt loam

D31—Boreal Forest Loamy High Flood Plains

Landform: High flood plains

Downslope shape: Convex

Across-slope shape: Convex

Slope range: 1 to 10 percent

Parent material: Organic material over sandy and gravelly alluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 3 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Well drained
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 11.9 centimeters)
Land capability subclass (nonirrigated): 4c
Ecological site: *Picea glauca/Rosa acicularis/Lupinus arcticus* (F231XY131AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Sandy or sandy-skeletal, mixed Typic Cryorthents
Typical profile:
O—0 to 13 centimeters; slightly decomposed plant material
A—13 to 18 centimeters; sandy loam
C—18 to 152 centimeters; stratified very gravelly loamy coarse sand to gravelly sandy loam

D31—Boreal Scrub Rocky Drainages

Landform: Drainageways
Downslope shape: Linear
Across-slope shape: Concave
Slope range: 3 to 20 percent
Parent material: Organic material over gravelly alluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 3 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Moderately well drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 10 centimeters)
Land capability subclass (nonirrigated): 5w
Ecological site: Boreal Scrub Gravelly Drainages (R231XY195AK)
Hydric soil status: Not hydric
Hydrologic soil group: B/D
Soil classification: Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryofluvents
Typical profile:
O—0 to 4 centimeters; slightly decomposed plant material
A—4 to 14 centimeters; stratified sandy loam to silt loam
C—14 to 152 centimeters; stratified very gravelly loamy sand to very gravelly sandy loam

Minor Components

D31—Boreal Woodland Rocky Low Flood Plains

Percentage of map unit: 11 percent
Slope: 1 to 5 percent
Landform: Low flood plains
Ecological site: *Populus balsamifera/Salix alaxensis/Calamagrostis canadensis* (F231XY130AK)
Hydric soil status: Not hydric

D31—Boreal Water, Flowing

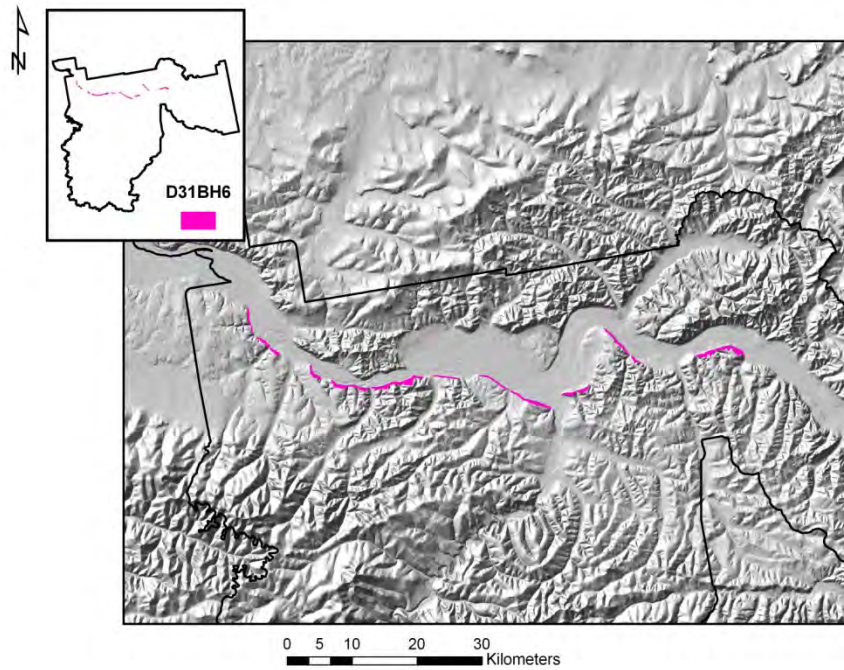
Percentage of map unit: 6 percent

Slope: 0 to 2 percent

Ecological site: Boreal Water, Non-Vegetated (R231XY194AK)

Hydric soil status: Not rated

D31BH6—Boreal Escarpments



Major land resource area: 231—Interior Alaska Highlands

Elevation: 150 to 900 meters

Mean annual precipitation: 242 to 705 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal forest gravelly colluvial escarpments: 56 percent

D31—Boreal rubble land: 25 percent

Dissimilar minor components: 19 percent

D31—Boreal Forest Gravelly Colluvial Escarpments

Landform: Escarpments

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northeast

Aspect (range): Northwest to southeast (clockwise)

Slope range: 50 to 95 percent

Parent material: Organic material over gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Well drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 9.4 centimeters)

Land capability subclass (nonirrigated): 7e

Ecological site: *Picea glauca/Rosa acicularis* (F231XY181AK)

Hydric soil status: Not hydric

Hydrologic soil group: A

Soil classification: Loamy-skeletal, mixed, superactive, nonacid Typic Cryorthents

Typical profile:

O—0 to 14 centimeters; slightly decomposed plant material

A—14 to 22 centimeters; cobbly sandy loam

C—22 to 152 centimeters; extremely cobbly coarse sandy loam

D31—Boreal Rubble Land

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Convex

Across-slope shape: Convex

Aspect (representative): South

Aspect (range): Southeast to northwest (clockwise)

Slope range: 0 to 85 percent

Parent material: Gravelly colluvium over residuum

Depth to restrictive feature: 45 to 60 centimeters to lithic bedrock

Shrink-swell potential: Low (linear extensibility percentage about 1)

Salinity (maximum based on representative value): Nonsaline
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Very low (about 0.5 centimeter)
Land capability subclass (nonirrigated): 8s
Ecological site: Boreal Lichen Rock Outcrops Slopes (R231XY120AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Typical profile:
 C—0 to 55 centimeters; extremely cobbly sandy loam
 2R—55 to 152 centimeters; bedrock

Minor Components

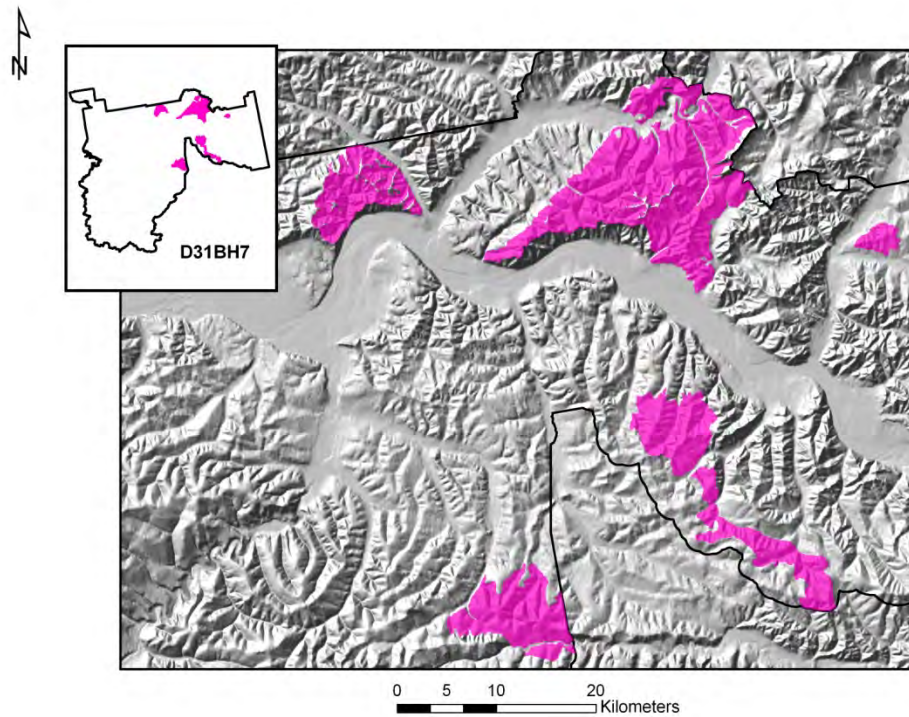
D31—Boreal Forest Loamy Depressions, Frozen

Percentage of map unit: 10 percent
Slope: 20 to 55 percent
Landform: Hills
Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
 (F231XY111AK)
Hydric soil status: Not hydric

D31—Boreal Taiga Gravelly Drainages

Percentage of map unit: 9 percent
Slope: 5 to 80 percent
Landform: Drainageways
Ecological site: *Picea mariana/Alnus viridis ssp. fruticosa/Calamagrostis canadensis*
 (F231XY192AK)
Hydric soil status: Not hydric

D31BH7—Boreal and Subalpine Hills with Common Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 240 to 1,000 meters

Mean annual precipitation: 244 to 688 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Subalpine woodland rocky colluvial slopes: 26 percent

D31—Boreal forest rocky colluvial slopes: 24 percent

D31—Boreal forest gravelly colluvial slopes, frozen: 20 percent

Dissimilar minor components: 30 percent

D31—Subalpine Woodland Rocky Colluvial Slopes

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Convex, linear

Across-slope shape: Linear, convex

Aspect (representative): West

Aspect (range): South to north (clockwise)

Slope range: 20 to 60 percent

Parent material: Organic material over gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Somewhat excessively drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Very low (about 1.7 centimeters)

Land capability subclass (nonirrigated): 4c

Ecological site: *Picea glauca/Betula glandulosa-Empetrum nigrum* (F231XY164AK)

Hydric soil status: Not hydric

Hydrologic soil group: A

Soil classification: Fragmental, mixed Typic Haplocrypts

Typical profile:

O—0 to 4 centimeters; slightly decomposed plant material

A—4 to 8 centimeters; cobbly silt loam

Bw—8 to 27 centimeters; extremely cobbly sandy loam

C—27 to 152 centimeters; cobbles

D31—Boreal Forest Rocky Colluvial Slopes

Landform: Hills

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): South

Aspect (range): East to west (clockwise)

Slope range: 15 to 70 percent

Parent material: Organic material over loess over gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Well drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 12.4 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: *Picea glauca*-*Betula neoalaskana*/*Alnus viridis* ssp. *fruticosa*-*Rosa acicularis* (F231XY182AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts
Typical profile:
O—0 to 8 centimeters; slightly decomposed plant material
A—8 to 14 centimeters; silt loam
2Bw—14 to 42 centimeters; very cobbly loam
2C—42 to 152 centimeters; extremely gravelly coarse sandy loam

D31—Boreal Forest Gravelly Colluvial Slopes, Frozen

Landform: Hills
Landform position (two-dimensional): Backslopes
Landform position (three-dimensional): Side slopes
Downslope shape: Linear
Across-slope shape: Linear
Aspect (representative): Northeast
Aspect (range): North to south (clockwise)
Slope range: 15 to 65 percent
Parent material: Organic material over loess over gravelly colluvium
Depth to restrictive feature: 50 to 90 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 5 to 25 centimeters (perched)
Available water capacity (entire profile): Low (about 8.9 centimeters)
Land capability subclass (nonirrigated): 6e
Ecological site: *Picea mariana*/*Vaccinium vitis-idaea*-*Vaccinium uliginosum* (F231XY111AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Soil classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 26 centimeters; silt loam

2C—26 to 58 centimeters; very gravelly fine sandy loam

2Cf—58 to 152 centimeters; permanently frozen extremely stony sandy loam

Minor Components

D31—Boreal Forest Rocky Sedimentary Colluvial Slopes

Percentage of map unit: 13 percent

Slope: 40 to 85 percent

Landform: Hills

Ecological site: *Picea glauca*-*Populus tremuloides*/*Shepherdia canadensis*-*Rosa acicularis*/*Mertensia paniculata*-*Geocaulon lividum* (F231XY110AK)

Hydric soil status: Not hydric

D31—Boreal Woodland Silty Eolian Slopes, Frozen

Percentage of map unit: 10 percent

Slope: 10 to 75 percent

Landform: Hills

Ecological site: *Picea mariana*/*Vaccinium uliginosum*-*Betula glandulosa*/*Carex bigelowii* (F231XY118AK)

Hydric soil status: Hydric

D31—Boreal Scrub Rocky Drainages

Percentage of map unit: 7 percent

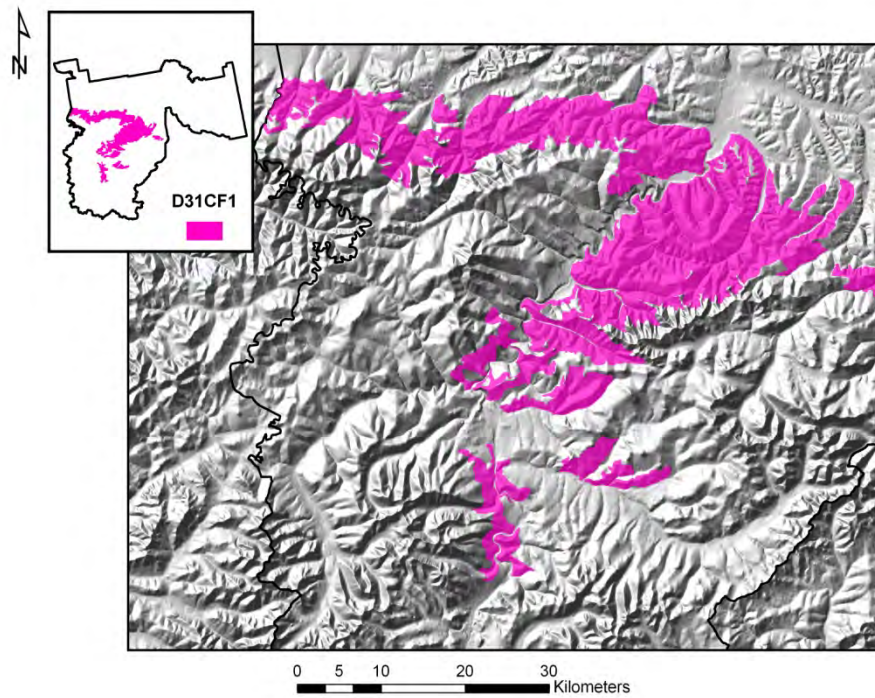
Slope: 3 to 20 percent

Landform: Drainageways

Ecological site: Boreal Scrub Gravelly Drainages (R231XY195AK)

Hydric soil status: Not hydric

D31CF1—Boreal and Subalpine Hills with Extensive Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 251 to 1,200 meters

Mean annual precipitation: 242 to 705 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal forest gravelly colluvial slopes, frozen: 32 percent

D31—Boreal woodland silty eolian slopes, frozen: 29 percent

D31—Subalpine woodland silty colluvial slopes, frozen: 20 percent

Dissimilar minor components: 19 percent

D31—Boreal Forest Gravelly Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northeast

Aspect (range): North to south (clockwise)

Slope range: 15 to 65 percent

Parent material: Organic material over gravelly colluvium

Depth to restrictive feature: 50 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 5 to 25 centimeters (perched)

Available water capacity (entire profile): Low (about 8.9 centimeters)

Land capability subclass (nonirrigated): 6e

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic
Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 26 centimeters; silt loam

C—26 to 58 centimeters; very gravelly fine sandy loam

Cf—58 to 152 centimeters; permanently frozen extremely stony sandy loam

D31—Boreal Woodland Silty Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): North

Aspect (range): Southwest to east (clockwise)
Slope range: 10 to 75 percent
Parent material: Mossy organic material over gravelly cryoturbate
Depth to restrictive feature: 45 to 90 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 2 to 25 centimeters (perched)
Available water capacity (entire profile): Low (about 8.2 centimeters)
Land capability subclass (nonirrigated): 6e
Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)
Hydric soil status: Hydric
Hydrologic soil group: D
Soil classification: Loamy-skeletal, mixed, superactive, acid, subgelic Typic Histoturbels
Typical profile:
Oi—0 to 25 centimeters; peat
Cjj—25 to 50 centimeters; gravelly silt loam
Cf—50 to 152 centimeters; permanently frozen very gravelly sandy loam

D31—Subalpine Woodland Silty Colluvial Slopes, Frozen

Landform: Hills
Landform position (two-dimensional): Backslopes
Landform position (three-dimensional): Side slopes
Downslope shape: Linear
Across-slope shape: Linear, concave
Aspect (representative): West
Aspect (range): South to northeast (clockwise)
Slope range: 15 to 65 percent
Parent material: Organic material over loess over gravelly colluvium
Depth to restrictive feature: 45 to 90 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 40 to 60 centimeters (perched)
Available water capacity (entire profile): Low (about 13.5 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: *Picea glauca/Salix-Vaccinium uliginosum* (F231XY184AK)
Hydric soil status: Not hydric
Hydrologic soil group: D

Soil classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic
Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 30 centimeters; silt loam

2C—30 to 64 centimeters; gravelly sandy loam

2Cf—64 to 152 centimeters; permanently frozen very gravelly sandy loam

Minor Components

D31—Subalpine Woodland Rocky Residual Slopes

Percentage of map unit: 11 percent

Slope: 1 to 5 percent

Landform: Hills

Ecological site: *Picea glauca/Betula glandulosa-Empetrum nigrum* (F231XY164AK)

Hydric soil status: Not hydric

D31—Boreal Taiga Gravelly Drainages

Percentage of map unit: 8 percent

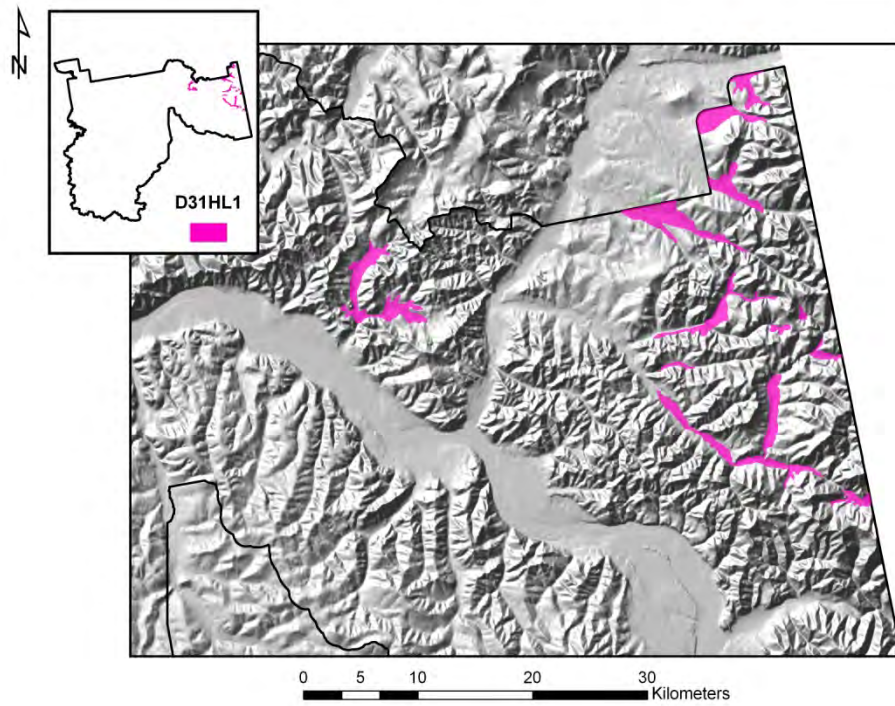
Slope: 5 to 80 percent

Landform: Drainageways

Ecological site: *Picea mariana/Alnus viridis ssp. fruticosa/Calamagrostis canadensis*
(F231XY192AK)

Hydric soil status: Not hydric

D31HL1—Boreal Eolian Hills with Common Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 200 to 1,000 meters

Mean annual precipitation: 244 to 705 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal taiga silty colluvial slopes, frozen: 37 percent

D31—Boreal taiga organic eolian slopes, frozen: 27 percent

Dissimilar minor components: 36 percent

D31—Boreal Taiga Silty Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 5 to 35 percent

Parent material: Organic material over silty colluvium

Depth to restrictive feature: 50 to 100 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 40 to 60 centimeters (perched)

Available water capacity (entire profile): Low (about 11.6 centimeters)

Land capability subclass (nonirrigated): 6s

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic
Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 28 centimeters; silt loam

C—28 to 60 centimeters; silt loam

Cf—60 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Organic Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Footslopes, toeslopes

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 40 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 9.5 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristsels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 48 centimeters; silt loam

Cf—48 to 152 centimeters; permanently frozen silt loam

Minor Components

D31—Boreal Scrub Rocky Drainages

Percentage of map unit: 14 percent

Slope: 3 to 20 percent

Landform: Drainageways

Ecological site: Boreal Scrub Gravelly Drainages (R231XY195AK)

Hydric soil status: Not hydric

D31—Boreal Woodland Rocky Low Flood Plains

Percentage of map unit: 13 percent

Slope: 1 to 5 percent

Landform: Low flood plains

Ecological site: *Populus balsamifera/Salix alaxensis/Calamagrostis canadensis* (F231XY130AK)

Hydric soil status: Not hydric

D31—Boreal Forest Loamy High Flood Plains, Frozen

Percentage of map unit: 9 percent

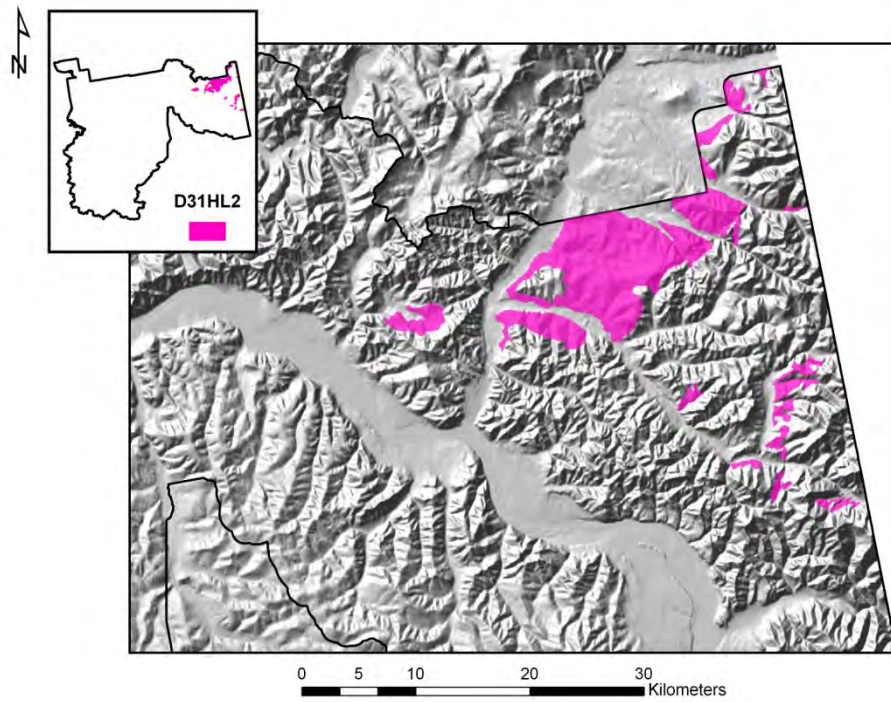
Slope: 1 to 3 percent

Landform: High flood plains

Ecological site: *Picea glauca/Alnus viridis ssp. fruticosa* (F231XY151AK)

Hydric soil status: Not hydric

D31HL2—Boreal Eolian Hills with Extensive Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 200 to 1,000 meters

Mean annual precipitation: 244 to 705 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal taiga silty colluvial slopes, frozen: 47 percent

D31—Boreal taiga organic eolian slopes, frozen: 43 percent

Dissimilar minor component: 10 percent

D31—Boreal Taiga Silty Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 5 to 35 percent

Parent material: Organic material over silty colluvium

Depth to restrictive feature: 50 to 100 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 40 to 60 centimeters (perched)

Available water capacity (entire profile): Low (about 11.6 centimeters)

Land capability subclass (nonirrigated): 6s

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic
Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 28 centimeters; silt loam

C—28 to 60 centimeters; silt loam

Cf—60 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Organic Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Footslopes, toeslopes

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 40 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 9.5 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristsels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 48 centimeters; silt loam

Cf—48 to 152 centimeters; permanently frozen silt loam

Minor Component

D31—Boreal Taiga Silty Drainages, Frozen

Percentage of map unit: 10 percent

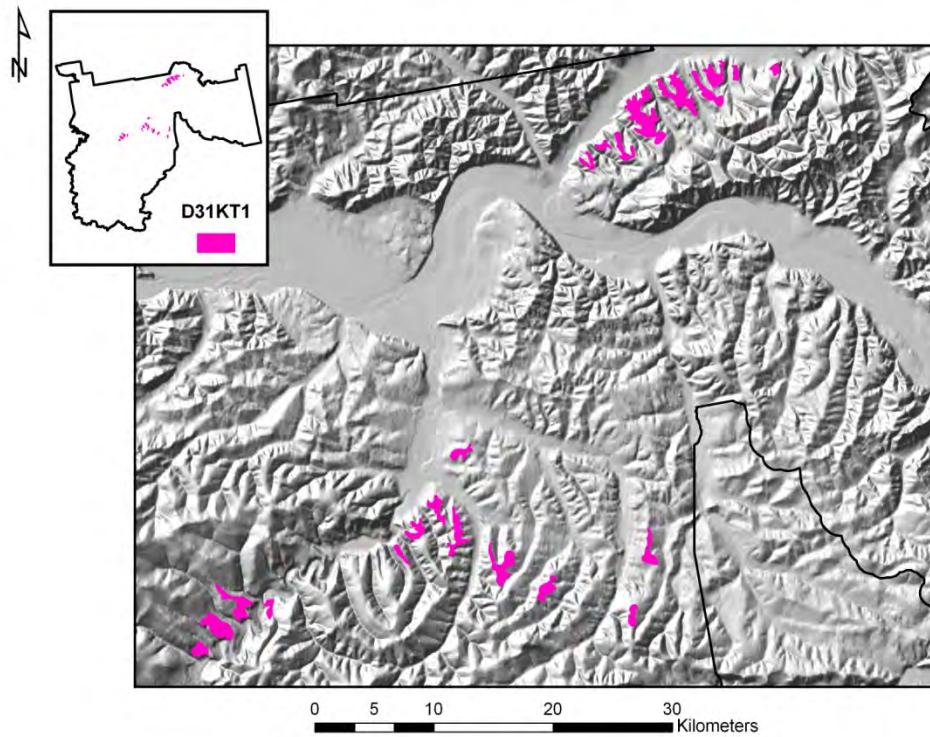
Slope: 1 to 15 percent

Landform: Drainageways

Ecological site: *Picea mariana/Salix-Ledum groenlandicum* (F231XY193AK)

Hydric soil status: Hydric

D31KT1—Boreal Eolian Plains with Extensive Permafrost, Wet



Major land resource area: 231—Interior Alaska Highlands

Elevation: 250 to 800 meters

Mean annual precipitation: 244 to 705 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal taiga organic eolian slopes, frozen: 79 percent

Dissimilar minor components: 21 percent

D31—Boreal Taiga Organic Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Footslopes, toeslopes

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 40 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 9.5 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 48 centimeters; silt loam

Cf—48 to 152 centimeters; permanently frozen silt loam

Minor Components

D31—Boreal Taiga Silty Eolian Slopes, Frozen

Percentage of map unit: 10 percent

Slope: 1 to 15 percent

Landform: Hills

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum* (F231XY111AK)

Hydric soil status: Not hydric

D31—Boreal Moss Organic Depressions

Percentage of map unit: 7 percent

Slope: 0 to 1 percent

Landform: Loess plains

Ecological site: Boreal Moss Peat Plain (R231XY150AK)

Hydric soil status: Hydric

D31—Boreal Scrub-Sedge Organic Depressions

Percentage of map unit: 4 percent

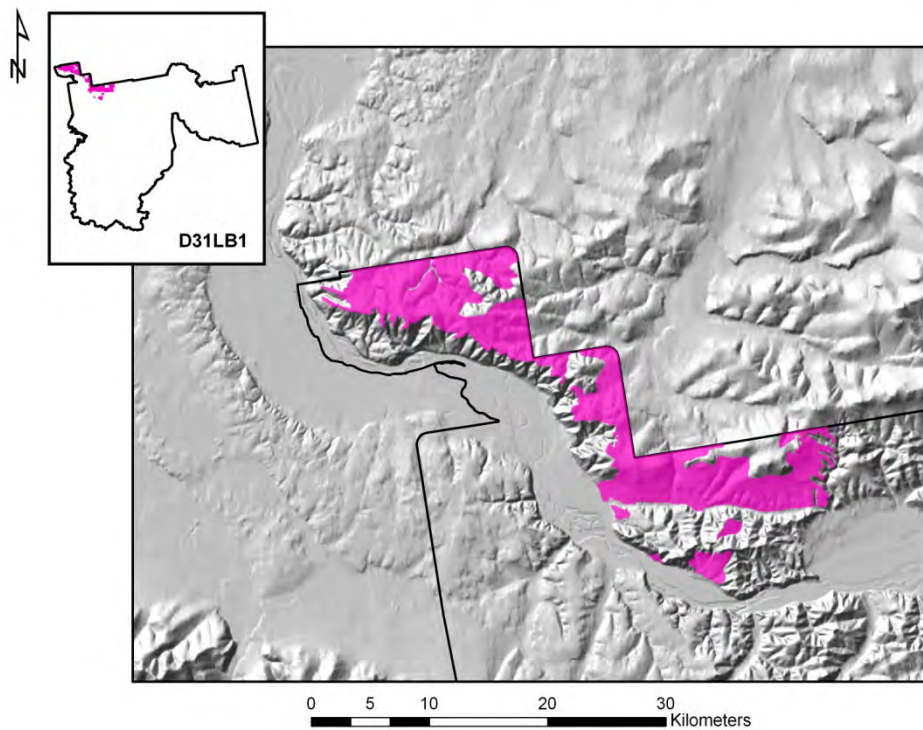
Slope: 0 to 2 percent

Landform: Loess plains

Ecological site: Boreal Scrub Peat Plains (R231XY158AK)

Hydric soil status: Hydric

D31LB1—Boreal Hills with Common Permafrost, Thin Surface



Major land resource area: 231—Interior Alaska Highlands

Elevation: 240 to 1,000 meters

Mean annual precipitation: 244 to 705 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal taiga silty eolian slopes, frozen: 31 percent

D31—Boreal taiga organic eolian slopes, frozen: 26 percent

D31—Boreal forest rocky colluvial slopes: 23 percent

Dissimilar minor components: 20 percent

D31—Boreal Taiga Silty Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Shoulders

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over loamy cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 40 to 60 centimeters (perched)

Available water capacity (entire profile): Low (about 10.7 centimeters)

Land capability subclass (nonirrigated): 6s

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic
Haploturbels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 28 centimeters; silt loam

Cjj—28 to 53 centimeters; silt loam

Cf—53 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Organic Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Footslopes, toeslopes

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 40 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 9.5 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristsels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 48 centimeters; silt loam

Cf—48 to 152 centimeters; permanently frozen silt loam

D31—Boreal Forest Rocky Colluvial Slopes

Landform: Hills

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): South

Aspect (range): East to west (clockwise)

Slope range: 15 to 70 percent

Parent material: Organic material over loess over gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Well drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 12.4 centimeters)

Land capability subclass (nonirrigated): 7e

Ecological site: *Picea glauca-Betula neoalaskana/Alnus viridis ssp. fruticosa-Rosa acicularis* (F231XY182AK)

Hydric soil status: Not hydric

Hydrologic soil group: A

Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Typical profile:

O—0 to 8 centimeters; slightly decomposed plant material

A—8 to 14 centimeters; silt loam

2Bw—14 to 42 centimeters; very cobbly loam

2C—42 to 152 centimeters; extremely gravelly coarse sandy loam

Minor Components

D31—Boreal Forest Rocky Sedimentary Colluvial Slopes

Percentage of map unit: 14 percent

Slope: 40 to 85 percent

Landform: Hills

Ecological site: *Picea glauca*-*Populus tremuloides*/*Shepherdia canadensis*-*Rosa acicularis*/*Mertensia paniculata*-*Geocaulon lividum* (F231XY110AK)

Hydric soil status: Not hydric

D31—Boreal Taiga Silty Drainages, Frozen

Percentage of map unit: 6 percent

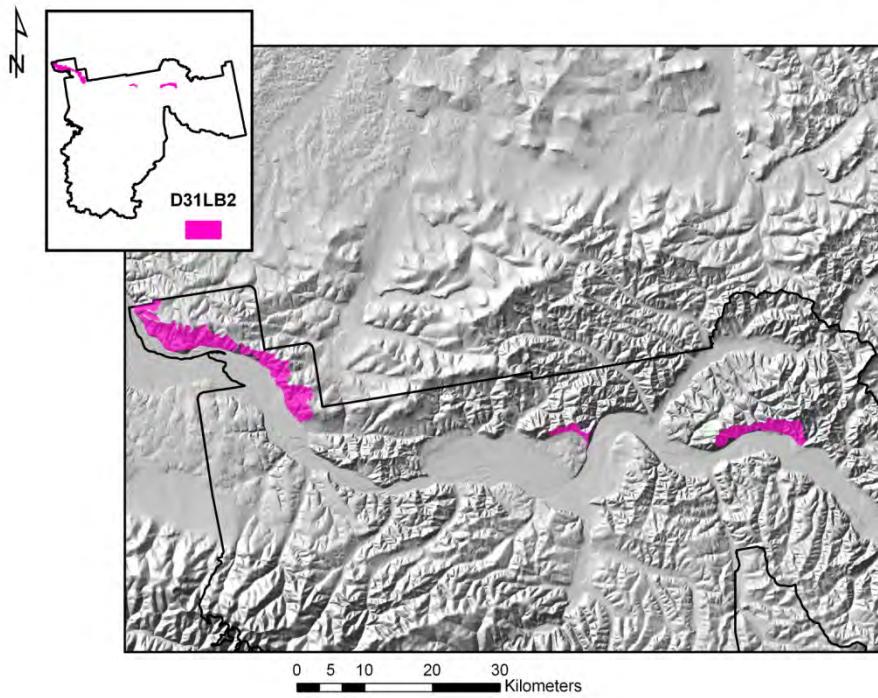
Slope: 1 to 15 percent

Landform: Drainageways

Ecological site: *Picea mariana*/*Salix*-*Ledum groenlandicum* (F231XY193AK)

Hydric soil status: Hydric

D31LB2—Boreal Hills with Common Permafrost, Steep



Major land resource area: 231—Interior Alaska Highlands

Elevation: 196 to 1,000 meters

Mean annual precipitation: 245 to 688 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal taiga silty colluvial slopes, frozen: 36 percent

D31—Boreal forest rocky sedimentary colluvial slopes: 34 percent

D31—Boreal forest rocky colluvial slopes: 27 percent

Dissimilar minor component: 3 percent

D31—Boreal Taiga Silty Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 5 to 35 percent

Parent material: Organic material over silty colluvium

Depth to restrictive feature: 50 to 100 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 40 to 60 centimeters (perched)

Available water capacity (entire profile): Low (about 11.6 centimeters)

Land capability subclass (nonirrigated): 6s

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic
Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 28 centimeters; silt loam

C—28 to 60 centimeters; silt loam

Cf—60 to 152 centimeters; permanently frozen silt loam

D31—Boreal Forest Rocky Sedimentary Colluvial Slopes

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): South

Aspect (range): Northeast to southwest (clockwise)

Slope range: 40 to 85 percent
Parent material: Organic material over gravelly colluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 2.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: 2 percent
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 14.2 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: *Picea glauca*-*Populus tremuloides*/*Shepherdia canadensis*-*Rosa acicularis*/*Mertensia paniculata*-*Geocaulon lividum* (F231XY110AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts
Typical profile:
O—0 to 4 centimeters; slightly decomposed plant material
A—4 to 10 centimeters; stony silt loam
Bw—10 to 41 centimeters; very gravelly loam
C—41 to 152 centimeters; extremely gravelly sandy loam

D31—Boreal Forest Rocky Colluvial Slopes

Landform: Hills
Landform position (two-dimensional): Backslopes
Downslope shape: Linear
Across-slope shape: Linear
Aspect (representative): South
Aspect (range): East to west (clockwise)
Slope range: 15 to 70 percent
Parent material: Organic material over loess over gravelly colluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Well drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 12.4 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: *Picea glauca*-*Betula neoalaskana*/*Alnus viridis* ssp. *fruticosa*-*Rosa acicularis* (F231XY182AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Typical profile:

- O—0 to 8 centimeters; slightly decomposed plant material
- A—8 to 14 centimeters; silt loam
- 2Bw—14 to 42 centimeters; very cobbly loam
- 2C—42 to 152 centimeters; extremely gravelly coarse sandy loam

Minor Component

D31—Boreal Scrub Rocky Colluvial Escarpments

Percentage of map unit: 3 percent

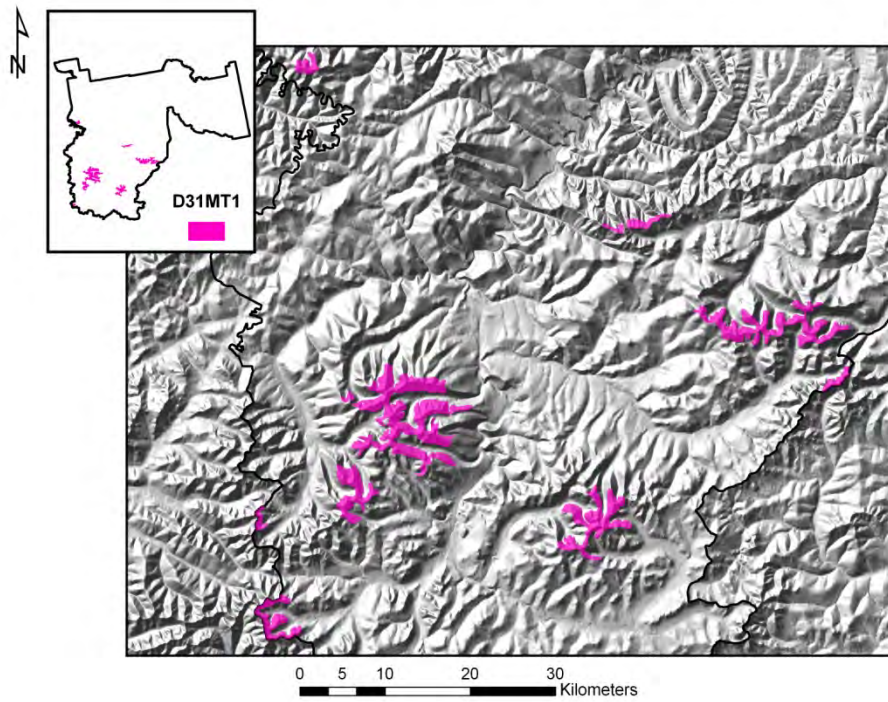
Slope: 50 to 100 percent

Landform: Escarpments

Ecological site: Boreal Scrub Gravelly Slopes, Dry (R231XY109AK)

Hydric soil status: Not hydric

D31MT1—Alpine Granitic Mountains, Dry



Major land resource area: 231—Interior Alaska Highlands

Elevation: 1,000 to 2,300 meters

Mean annual precipitation: 288 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 50 to 80 days

Map Unit Composition

D31—Alpine rubble land: 66 percent

D31—Alpine low scrub gravelly colluvial slopes: 22 percent

Dissimilar minor components: 12 percent

D31—Alpine Rubble Land

Landform: Mountains

Landform position (two-dimensional): Summits, shoulders, backslopes, toeslopes

Landform position (three-dimensional): Base slopes, crests, side slopes

Downslope shape: Convex

Across-slope shape: Convex

Aspect (representative): Northeast

Aspect (range): West to southeast (clockwise)

Slope range: 25 to 100 percent

Parent material: Gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Salinity (maximum based on representative value): Nonsaline

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Somewhat excessively drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Very low (about 0 centimeter)

Land capability subclass (nonirrigated): 8s

Ecological site: Alpine and Subalpine Lichen Rock Outcrops Slopes (R231XY127AK)

Hydric soil status: Not rated

Hydrologic soil group: D

Typical profile:

C—0 to 152 centimeters; cobbles

D31—Alpine Low Scrub Gravelly Colluvial Slopes

Landform: Mountains

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear, convex

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 20 to 70 percent

Parent material: Gravelly colluvium derived from acid igneous rock

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 1)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 12.7 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly Circles, Steep
(R231XY134AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Loamy-skeletal, mixed, superactive, acid, subgelic Typic
Haplogelepts
Typical profile:
A—0 to 11 centimeters; stony silt loam
Bw—11 to 34 centimeters; very cobbly coarse sandy loam
C—34 to 152 centimeters; extremely stony coarse sandy loam

Minor Components

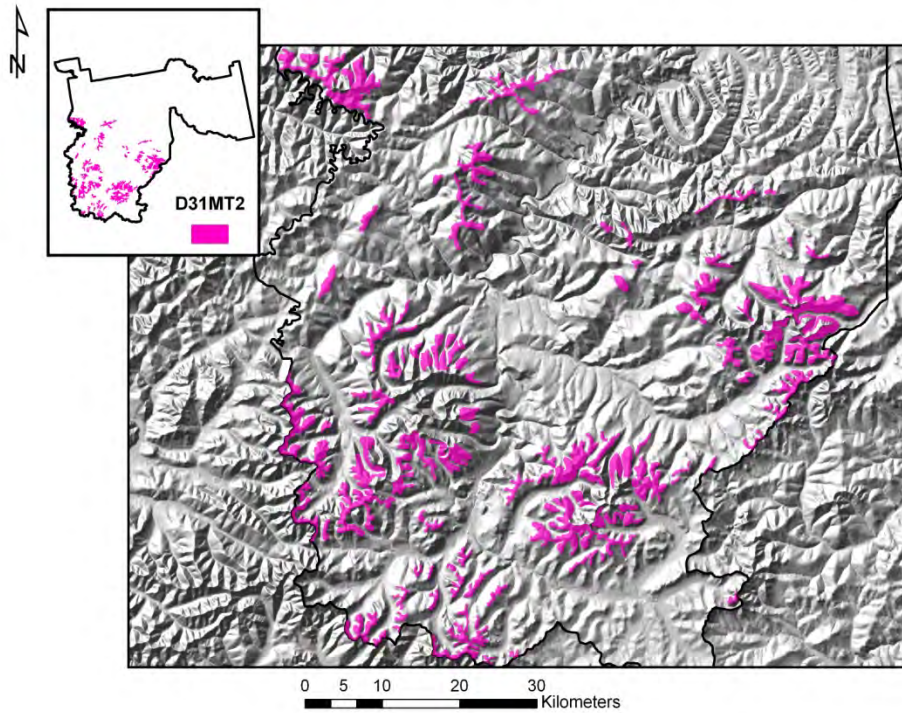
D31—Alpine Scrub Gravelly Circles

Percentage of map unit: 7 percent
Slope: 4 to 28 percent
Landform: Mountains
Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly, Circles (R231XY134AK)
Hydric soil status: Not hydric

D31—Alpine Scrub Gravelly Circles, Acid

Percentage of map unit: 5 percent
Slope: 9 to 35 percent
Landform: Mountains
Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly Hummock
(R231XY101AK)
Hydric soil status: Not hydric

D31MT2—Alpine Granitic Mountains



Major land resource area: 231—Interior Alaska Highlands

Elevation: 1,000 to 2,300 meters

Mean annual precipitation: 288 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 50 to 80 days

Map Unit Composition

D31—Alpine low scrub gravelly colluvial slopes: 32 percent

D31—Alpine scrub gravelly circles: 30 percent

D31—Alpine rubble land: 24 percent

Dissimilar minor components: 14 percent

D31—Alpine Low Scrub Gravelly Colluvial Slopes

Landform: Mountains

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear, convex

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 20 to 70 percent

Parent material: Gravelly colluvium derived from acid igneous rock

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 1)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Somewhat excessively drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 12.7 centimeters)

Land capability subclass (nonirrigated): 7e

Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly Circles, Steep (R231XY134AK)

Hydric soil status: Not hydric

Hydrologic soil group: A

Soil classification: Loamy-skeletal, mixed, superactive, acid, subgelic Typic Haplogelepts

Typical profile:

A—0 to 11 centimeters; stony silt loam

Bw—11 to 34 centimeters; very cobbly coarse sandy loam

C—34 to 152 centimeters; extremely stony coarse sandy loam

D31—Alpine Scrub Gravelly Circles

Landform: Mountains

Landform position (two-dimensional): Summits

Landform position (three-dimensional): Crests

Downslope shape: Linear

Across-slope shape: Convex

Aspect (representative): North

Aspect (range): Northwest to south (clockwise)

Slope range: 6 to 55 percent
Parent material: Gravelly cryoturbate
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 1)
Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 12.6 centimeters)
Land capability subclass (nonirrigated): 6e
Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly, Circles (R231XY134AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Typic Haploglepts
Typical profile:
A—0 to 10 centimeters; gravelly silt loam
Bw—10 to 31 centimeters; very gravelly sandy loam
C—31 to 152 centimeters; extremely stony fine sandy loam

D31—Alpine Rubble Land

Landform: Mountains
Landform position (two-dimensional): Summits, shoulders, backslopes, toeslopes
Landform position (three-dimensional): Base slopes, crests, side slopes
Downslope shape: Convex
Across-slope shape: Convex
Aspect (representative): Northeast
Aspect (range): West to southeast (clockwise)
Slope range: 25 to 100 percent
Parent material: Gravelly colluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Salinity (maximum based on representative value): Nonsaline
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Very low (about 0 centimeter)
Land capability subclass (nonirrigated): 8s
Ecological site: Alpine and Subalpine Lichen Rock Outcrops Slopes (R231XY127AK)
Hydric soil status: Not rated
Hydrologic soil group: D
Typical profile:
C—0 to 152 centimeters; cobbles

Minor Components

D31—Alpine Scrub Gravelly Circles, Acid

Percentage of map unit: 7 percent

Slope: 10 to 25 percent

Landform: Mountains

Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly Hummock
(R231XY101AK)

Hydric soil status: Not hydric

D31—Alpine Scrub Loamy Hummocks, Frozen

Percentage of map unit: 7 percent

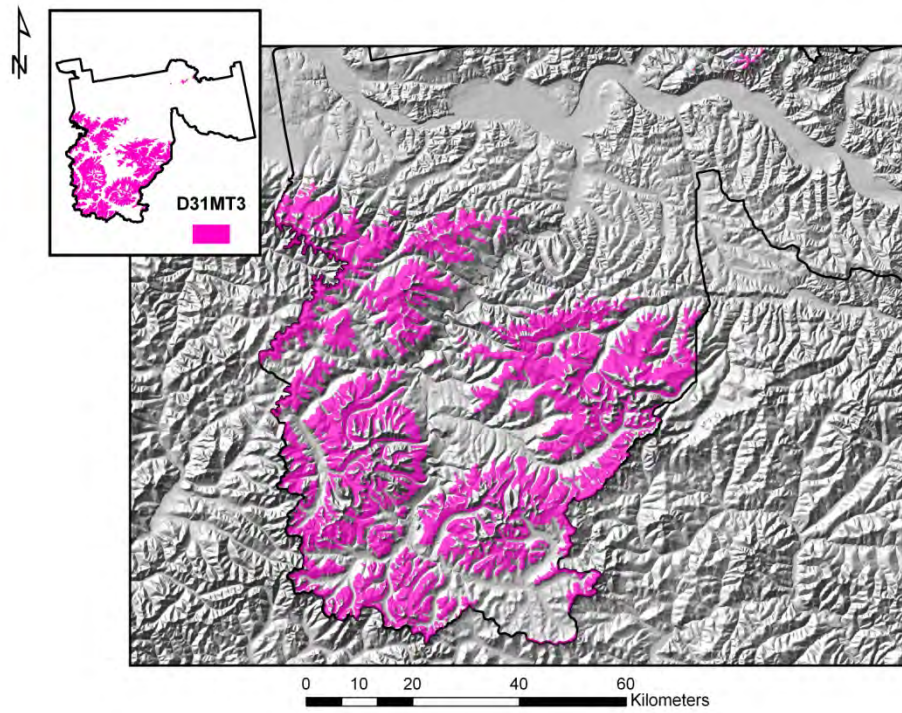
Slope: 12 to 30 percent

Landform: Mountains

Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Peat Hummock (R231XY114AK)

Hydric soil status: Not hydric

D31MT3—Alpine Rounded Mountains with Common Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 800 to 1,800 meters

Mean annual precipitation: 288 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Alpine low scrub organic hummocks, frozen: 25 percent

D31—Alpine scrub loamy hummocks, frozen: 25 percent

D31—Alpine low scrub loamy solifluction lobes: 22 percent

Dissimilar minor components: 28 percent

D31—Alpine Low Scrub Organic Hummocks, Frozen

Landform: Rounded mountains

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 12 to 25 percent

Parent material: Organic material over loamy colluvium

Depth to restrictive feature: 39 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 2 to 20 centimeters (perched)

Available water capacity (entire profile): Low (about 8.8 centimeters)

Land capability subclass (nonirrigated): 6s

Ecological site: Alpine Dwarf Scrub-Graminoid Mosaic Organic Frozen Mound (R231XY116AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

 Oi—0 to 44 centimeters; peat

 Cf—44 to 152 centimeters; permanently frozen silt loam

D31—Alpine Scrub Loamy Hummocks, Frozen

Landform: Mountains

Landform position (two-dimensional): Footslopes, toeslopes

Landform position (three-dimensional): Base slopes

Downslope shape: Convex

Across-slope shape: Linear, convex

Aspect (representative): North

Aspect (range): Northwest to south (clockwise)

Slope range: 6 to 20 percent

Parent material: Organic material over loamy cryoturbate

Depth to restrictive feature: 50 to 80 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Somewhat poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 2 to 20 centimeters (perched)
Available water capacity (entire profile): Low (about 10.1 centimeters)
Land capability subclass (nonirrigated): 6s
Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Peat Hummock (R231XY114AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Soil classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Folistic Haploturbels
Typical profile:
Oi—0 to 31 centimeters; slightly decomposed plant material
Cjj—31 to 57 centimeters; gravelly sandy loam
Cf—57 to 152 centimeters; permanently frozen cobbly coarse sandy loam

D31—Alpine Low Scrub Loamy Solifluction Lobes

Landform: Mountains
Landform position (two-dimensional): Backslopes
Landform position (three-dimensional): Side slopes
Downslope shape: Linear
Across-slope shape: Linear
Aspect (representative): North
Aspect (range): East to west (clockwise)
Slope range: 20 to 55 percent
Parent material: Organic material over gravelly cryoturbate
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Moderate (about 20.1 centimeters)
Land capability subclass (nonirrigated): 6e
Ecological site: Alpine Dwarf Scrub-Graminoid Mosaic Loamy Mound (R231XY113AK)
Hydric soil status: Not hydric
Hydrologic soil group: B/D
Soil classification: Sandy or sandy-skeletal, mixed, subgelic Oxyaquic Gelorthents

Typical profile:

- O—0 to 5 centimeters; slightly decomposed plant material
- A—5 to 21 centimeters; stony silt loam
- C—21 to 152 centimeters; very cobbly loamy coarse sand

Minor Components

D31—Subalpine Scrub Silty Till Slopes

Percentage of map unit: 10 percent

Slope: 15 to 65 percent

Landform: Mountains

Ecological site: Subalpine Scrub Loamy Hummock (R231XY148AK)

Hydric soil status: Not hydric

D31—Alpine Scrub Gravelly Circles, Acid

Percentage of map unit: 9 percent

Slope: 1 to 15 percent

Landform: Mountains

Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly Hummock
(R231XY101AK)

Hydric soil status: Not hydric

D31—Subalpine Tussock-Scrub Loamy Colluvial Slopes, Frozen

Percentage of map unit: 9 percent

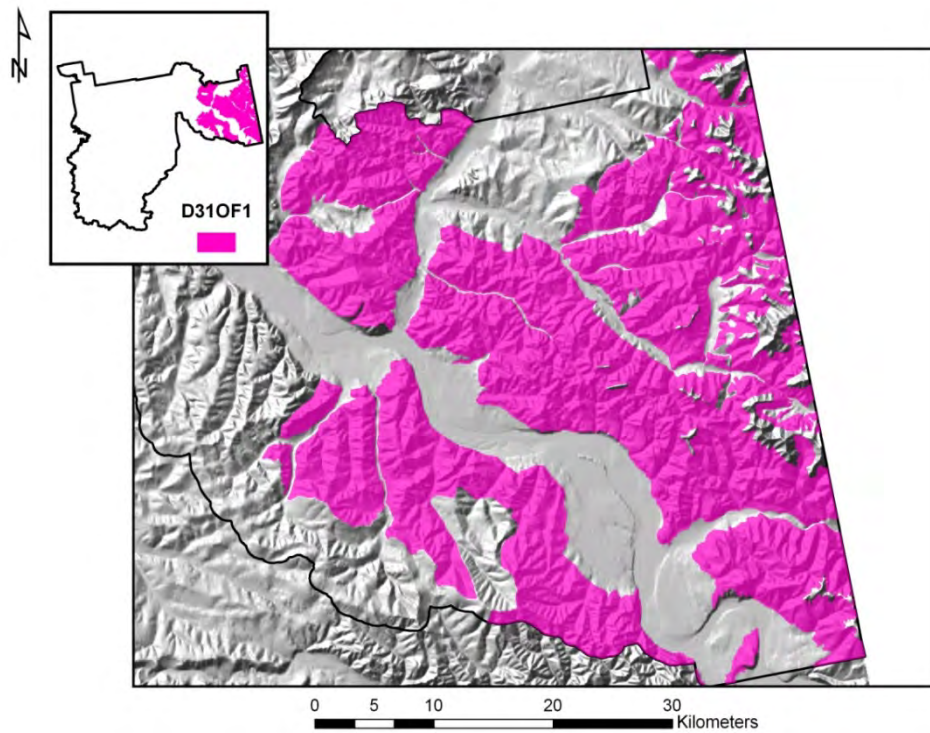
Slope: 10 to 35 percent

Landform: Mountains

Ecological site: Subalpine Scrub-Tussock Loamy Frozen Hummock (R231XY185AK)

Hydric soil status: Hydric

D310F1—Boreal Hills with Common Permafrost, Nonacid



Major land resource area: 231—Interior Alaska Highlands

Elevation: 240 to 1,000 meters

Mean annual precipitation: 244 to 688 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal forest gravelly colluvial slopes, frozen: 27 percent

D31—Boreal woodland silty eolian slopes, frozen: 24 percent

D31—Boreal forest rocky sedimentary colluvial slopes: 21 percent

Dissimilar minor components: 28 percent

D31—Boreal Forest Gravelly Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northeast

Aspect (range): North to south (clockwise)

Slope range: 15 to 65 percent

Parent material: Organic material over gravelly colluvium

Depth to restrictive feature: 50 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 5 to 25 centimeters (perched)

Available water capacity (entire profile): Low (about 8.9 centimeters)

Land capability subclass (nonirrigated): 6e

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic
Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 26 centimeters; silt loam

C—26 to 58 centimeters; very gravelly fine sandy loam

Cf—58 to 152 centimeters; permanently frozen extremely stony sandy loam

D31—Boreal Woodland Silty Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): North

Aspect (range): Southwest to east (clockwise)
Slope range: 10 to 75 percent
Parent material: Mossy organic material over gravelly cryoturbate
Depth to restrictive feature: 45 to 90 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 2 to 25 centimeters (perched)
Available water capacity (entire profile): Low (about 8.2 centimeters)
Land capability subclass (nonirrigated): 6e
Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)
Hydric soil status: Hydric
Hydrologic soil group: D
Soil classification: Loamy-skeletal, mixed, superactive, acid, subgelic Typic Histoturbels
Typical profile:
Oi—0 to 25 centimeters; peat
Cjj—25 to 50 centimeters; gravelly silt loam
Cf—50 to 152 centimeters; permanently frozen very gravelly sandy loam

D31—Boreal Forest Rocky Sedimentary Colluvial Slopes

Landform: Hills
Landform position (two-dimensional): Backslopes
Landform position (three-dimensional): Side slopes
Downslope shape: Linear
Across-slope shape: Linear
Aspect (representative): South
Aspect (range): Northeast to southwest (clockwise)
Slope range: 40 to 85 percent
Parent material: Organic material over gravelly colluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 2.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: 2 percent
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 14.2 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: *Picea glauca-Populus tremuloides/Shepherdia canadensis-Rosa acicularis/Mertensia paniculata-Geocaulon lividum* (F231XY110AK)
Hydric soil status: Not hydric
Hydrologic soil group: A

Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocryepts

Typical profile:

O—0 to 4 centimeters; slightly decomposed plant material

A—4 to 10 centimeters; stony silt loam

Bw—10 to 41 centimeters; very gravelly loam

C—41 to 152 centimeters; extremely gravelly sandy loam

Minor Components

D31—Boreal Forest Rocky Colluvial Slopes

Percentage of map unit: 10 percent

Slope: 15 to 70 percent

Landform: Hills

Ecological site: *Picea glauca*-*Betula neoalaskana*/*Alnus viridis* ssp. *fruticosa*-*Rosa acicularis* (F231XY182AK)

Hydric soil status: Not hydric

D31—Boreal Woodland Rocky Colluvial Slopes

Percentage of map unit: 10 percent

Slope: 10 to 70 percent

Landform: Hills

Ecological site: *Picea mariana*-*Betula neoalaskana*/*Vaccinium uliginosum*/*Cladonia* (F231XY162AK)

Hydric soil status: Not hydric

D31—Boreal Scrub Rocky Drainages

Percentage of map unit: 8 percent

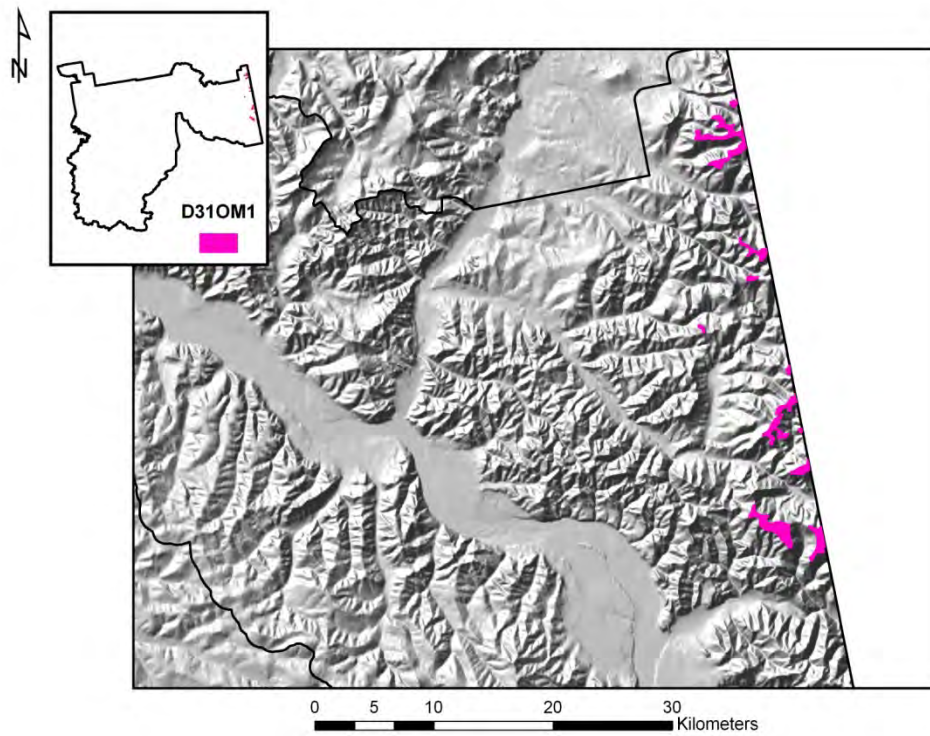
Slope: 3 to 20 percent

Landform: Drainageways

Ecological site: Boreal Scrub Gravelly Drainages (R231XY195AK)

Hydric soil status: Not hydric

D31OM1—Alpine Angular Mountains



Major land resource area: 231—Interior Alaska Highlands

Elevation: 900 to 2,300 meters

Mean annual precipitation: 288 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 50 to 80 days

Map Unit Composition

D31—Alpine scrub silty circles: 57 percent

D31—Alpine rubble land: 30 percent

Dissimilar minor component: 13 percent

D31—Alpine Scrub Silty Circles

Landform: Mountains

Landform position (two-dimensional): Summits, backslopes

Landform position (three-dimensional): Side slopes, crests

Downslope shape: Convex

Across-slope shape: Convex

Aspect (representative): Northeast

Aspect (range): Southeast to northwest (clockwise)

Slope range: 25 to 75 percent

Parent material: Loess over gravelly cryoturbate

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 1)

Salinity (maximum based on representative value): Very slightly saline (about 3.3 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: 8 percent

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Well drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 13.4 centimeters)

Land capability subclass (nonirrigated): 6e

Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly Slopes, Basic (R231XY105AK)

Hydric soil status: Not hydric

Hydrologic soil group: B

Soil classification: Loamy-skeletal, mixed, superactive, calcareous, subgelic Typic Haplogelolls

Typical profile:

A—0 to 11 centimeters; silt loam

Bw—11 to 29 centimeters; very gravelly sandy loam

C—29 to 152 centimeters; very stony sandy loam

D31—Alpine Rubble Land

Landform: Mountains

Landform position (two-dimensional): Summits, shoulders, backslopes, toeslopes

Landform position (three-dimensional): Base slopes, crests, side slopes

Downslope shape: Convex

Across-slope shape: Convex

Aspect (representative): Northeast

Aspect (range): West to southeast (clockwise)

Slope range: 25 to 100 percent

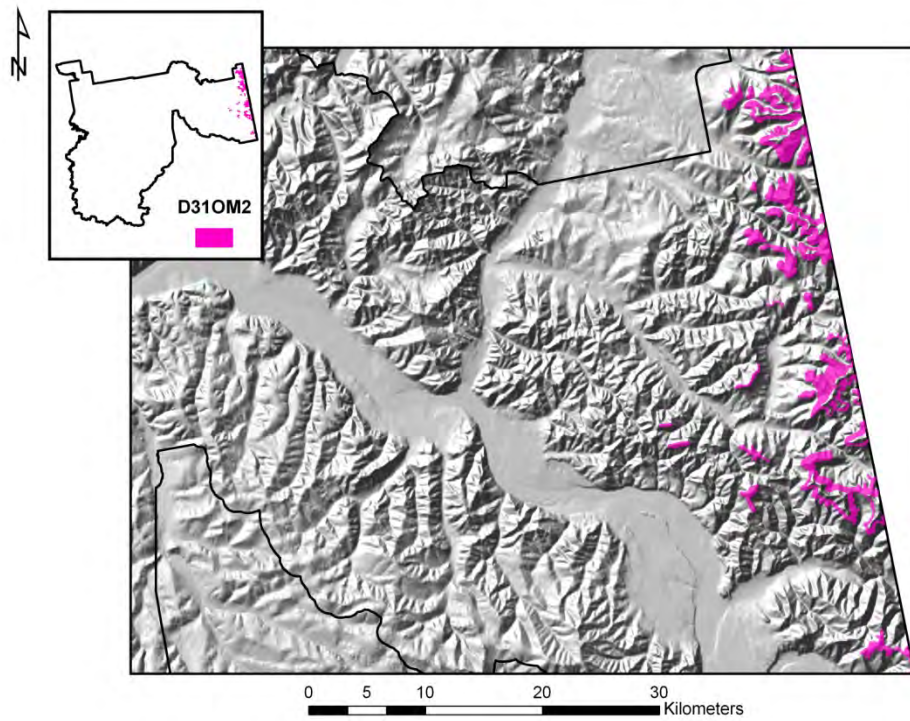
Parent material: Gravelly colluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Salinity (maximum based on representative value): Nonsaline
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Very low (about 0 centimeter)
Land capability subclass (nonirrigated): 8s
Ecological site: Alpine and Subalpine Lichen Rock Outcrops Slopes (R231XY127AK)
Hydric soil status: Not rated
Hydrologic soil group: D
Typical profile:
C—0 to 152 centimeters; cobbles

Minor Component

D31—Alpine Bedrock

Percentage of map unit: 13 percent
Slope: 25 to 100 percent
Landform: Mountains
Ecological site: Alpine and Subalpine Lichen Rock Outcrops Slopes (R231XY127AK)
Hydric soil status: Not rated

D31OM2—Alpine Lower Mountain Slopes



Major land resource area: 231—Interior Alaska Highlands

Elevation: 750 to 2,300 meters

Mean annual precipitation: 278 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Alpine scrub silty circles: 60 percent

D31—Subalpine woodland silty colluvial slopes, frozen: 18 percent

Dissimilar minor components: 22 percent

D31—Alpine Scrub Silty Circles

Landform: Mountains

Landform position (two-dimensional): Summits, backslopes

Landform position (three-dimensional): Side slopes, crests

Downslope shape: Convex

Across-slope shape: Convex

Aspect (representative): Northeast

Aspect (range): Southeast to northwest (clockwise)

Slope range: 25 to 75 percent

Parent material: Loess over gravelly cryoturbate

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 1)

Salinity (maximum based on representative value): Very slightly saline (about 3.3 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: 8 percent

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Well drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 13.4 centimeters)

Land capability subclass (nonirrigated): 6e

Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly Slopes, Basic (R231XY105AK)

Hydric soil status: Not hydric

Hydrologic soil group: B

Soil classification: Loamy-skeletal, mixed, superactive, calcareous, subgelic Typic Haplogelolls

Typical profile:

A—0 to 11 centimeters; silt loam

Bw—11 to 29 centimeters; very gravelly sandy loam

C—29 to 152 centimeters; very stony sandy loam

D31—Subalpine Woodland Silty Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear, concave

Aspect (representative): West

Aspect (range): South to northeast (clockwise)

Slope range: 30 to 65 percent

Parent material: Organic material over loess over gravelly colluvium
Depth to restrictive feature: 45 to 90 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 40 to 60 centimeters (perched)
Available water capacity (entire profile): Low (about 13.5 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: *Picea glauca*/*Salix-Vaccinium uliginosum* (F231XY184AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Soil classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels
Typical profile:
Oi—0 to 21 centimeters; slightly decomposed plant material
A—21 to 30 centimeters; silt loam
C—30 to 64 centimeters; gravelly sandy loam
Cf—64 to 152 centimeters; permanently frozen very gravelly sandy loam

Minor Components

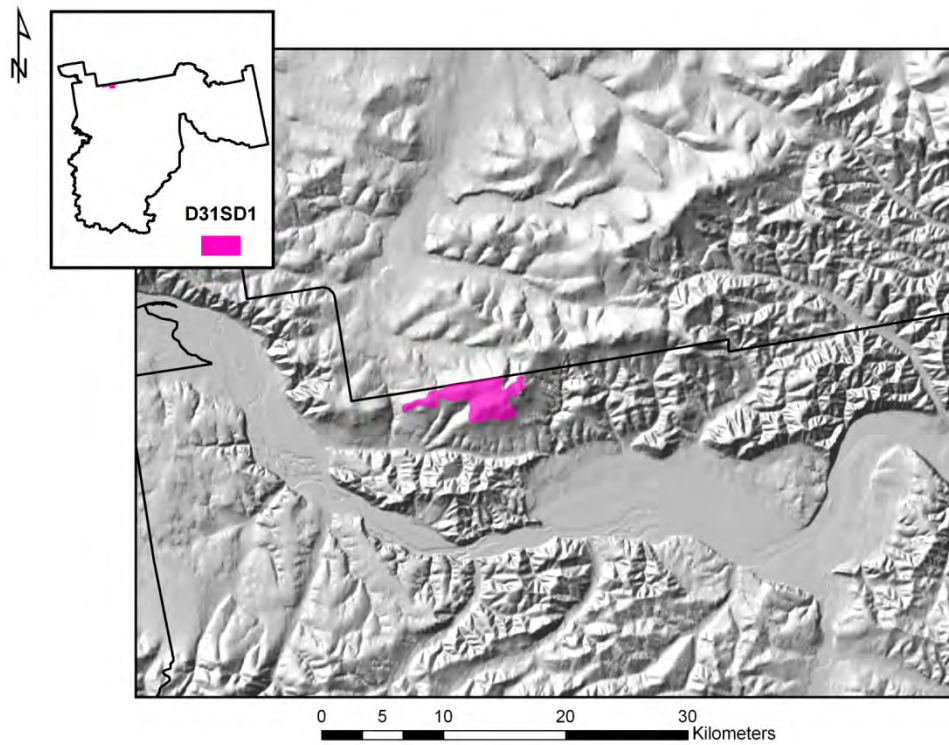
D31—Alpine Bedrock

Percentage of map unit: 14 percent
Slope: 25 to 100 percent
Landform: Mountains
Ecological site: Alpine and Subalpine Lichen Rock Outcrops Slopes (R231XY127AK)
Hydric soil status: Not rated

D31—Subalpine Woodland Silty Colluvial Slopes

Percentage of map unit: 8 percent
Slope: 15 to 45 percent
Landform: Hills
Ecological site: *Picea glauca*/*Salix pulchra*/*Carex* (F231XY140AK)
Hydric soil status: Not hydric

D31SD1—Alpine Rounded Mountains with Extensive Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 750 to 2,300 meters

Mean annual precipitation: 278 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Alpine low scrub organic hummocks, frozen: 48 percent

D31—Alpine tussock-scrub silty polygons, frozen: 29 percent

Dissimilar minor components: 23 percent

D31—Alpine Low Scrub Organic Hummocks, Frozen

Landform: Rounded mountains

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 5 to 20 percent

Parent material: Organic material over loamy colluvium

Depth to restrictive feature: 39 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 2 to 20 centimeters (perched)

Available water capacity (entire profile): Low (about 8.8 centimeters)

Land capability subclass (nonirrigated): 6s

Ecological site: Alpine Dwarf Scrub-Graminoid Mosaic Organic Frozen Mound (R231XY116AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

 Oi—0 to 44 centimeters; peat

 Cf—44 to 152 centimeters; permanently frozen silt loam

D31—Alpine Tussock-Scrub Silty Polygons, Frozen

Landform: Rounded mountains

Landform position (two-dimensional): Summits, shoulders

Landform position (three-dimensional): Crests

Downslope shape: Convex

Across-slope shape: Convex

Slope range: 1 to 10 percent

Parent material: Organic material over loamy cryoturbate

Depth to restrictive feature: 40 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 2 to 20 centimeters (perched)

Available water capacity (entire profile): Low (about 8.7 centimeters)

Land capability subclass (nonirrigated): 6s

Ecological site: Alpine Lichen Loamy Polygon (R231XY115AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Coarse-silty, mixed, superactive, acid, subgelic Typic Histoturbels

Typical profile:

Oi—0 to 27 centimeters; peat

A—27 to 35 centimeters; silt loam

Cjj—35 to 42 centimeters; silt loam

Cf—42 to 152 centimeters; permanently frozen silt loam

Minor Components

D31—Subalpine Woodland Silty Colluvial Slopes

Percentage of map unit: 11 percent

Slope: 5 to 20 percent

Landform: Hills

Ecological site: *Picea glauca*/*Salix pulchra*/*Carex* (F231XY140AK)

Hydric soil status: Not hydric

D31—Subalpine Scrub Loamy Colluvial Slopes, Frozen

Percentage of map unit: 7 percent

Slope: 5 to 25 percent

Landform: Hills

Ecological site: Subalpine Scrub Loamy Frozen Circles (R231XY129AK)

Hydric soil status: Hydric

D31—Alpine Rubble Land

Percentage of map unit: 5 percent

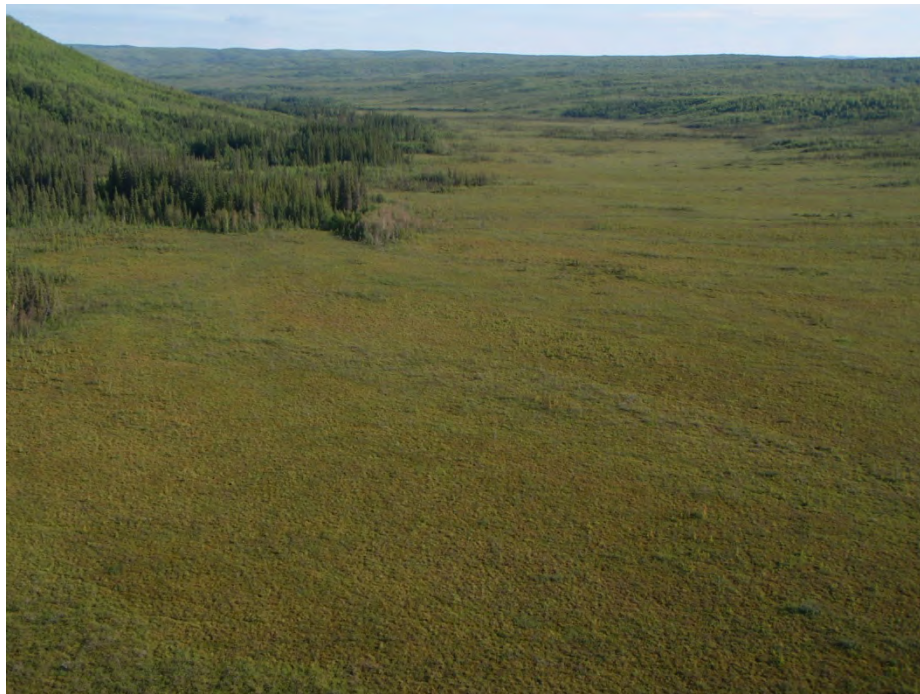
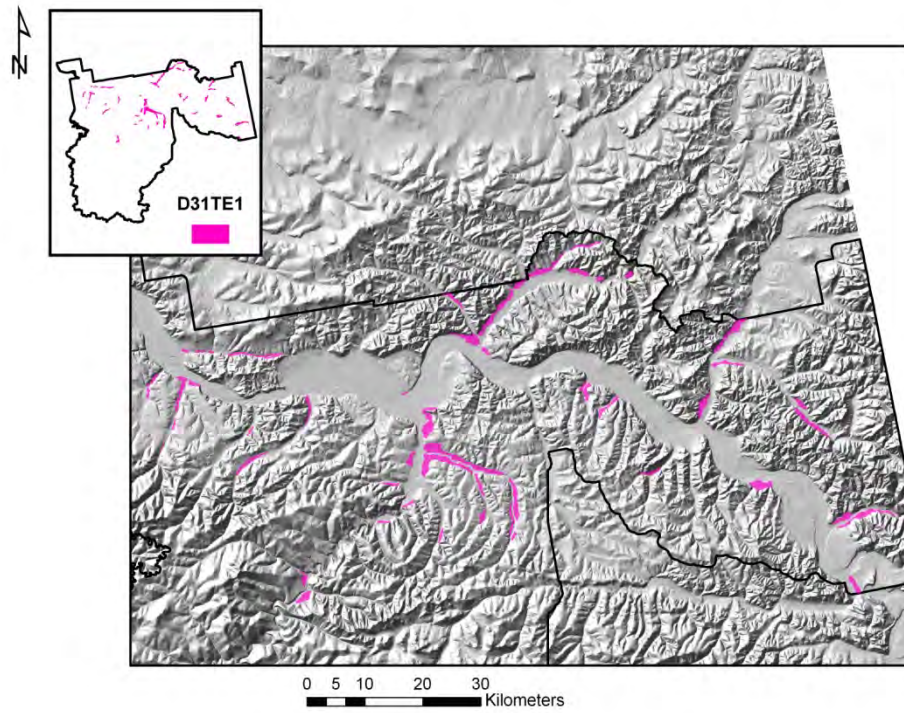
Slope: 25 to 100 percent

Landform: Mountains

Ecological site: Alpine and Subalpine Lichen Rock Outcrops Slopes (R231XY127AK)

Hydric soil status: Not rated

D31TE1—Boreal Eolian Terraces with Extensive Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 197 to 600 meters

Mean annual precipitation: 233 to 539 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 50 to 110 days

Map Unit Composition

D31—Boreal taiga/tussock organic terraces, frozen: 62 percent

D31—Boreal taiga silty terraces, frozen: 20 percent

Dissimilar minor components: 18 percent

D31—Boreal Taiga/Tussock Organic Terraces, Frozen

Landform: Terraces

Landform position (three-dimensional): Treads

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 10 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 10.8 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum*
(F231XY169AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristsels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 54 centimeters; silt loam

Cjff—54 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Silty Terraces, Frozen

Landform: Terraces

Landform position (three-dimensional): Treads

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): East

Aspect (range): Northeast to southwest (clockwise)

Slope range: 5 to 30 percent

Parent material: Organic material over loamy alluvium

Depth to restrictive feature: 50 to 115 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Very poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 5 to 25 centimeters (perched)
Available water capacity (entire profile): Low (about 13.5 centimeters)
Land capability subclass (nonirrigated): 4s
Ecological site: *Picea mariana/Vaccinium vitis-idaea-Rosa acicularis* (F231XY178AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Fluventic
Haplorthels
Typical profile:
Oi—0 to 18 centimeters; slightly decomposed plant material
A—18 to 28 centimeters; silt loam
C—28 to 69 centimeters; sandy loam
Cf—69 to 152 centimeters; permanently frozen gravelly sandy loam

Minor Components

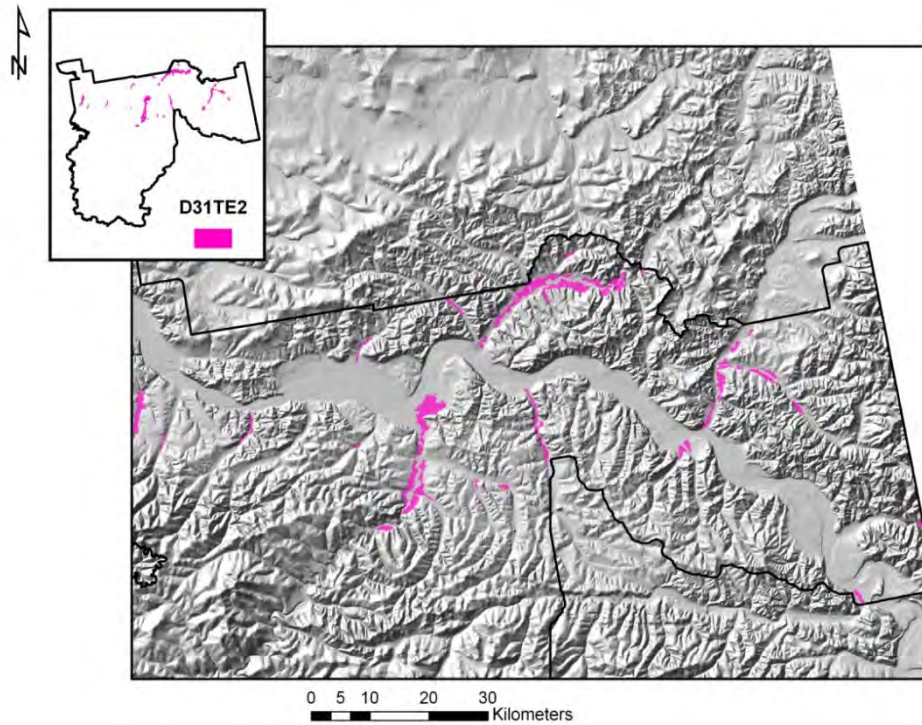
D31—Boreal Forest Silty Drainages, Frozen

Percentage of map unit: 10 percent
Slope: 1 to 10 percent
Landform: Drainageways
Ecological site: *Betula neoalaskana/Alnus incana ssp. tenuifolia* (F231XY197AK)
Hydric soil status: Hydric

D31—Boreal Grass Organic Depressions

Percentage of map unit: 8 percent
Slope: 0 to 1 percent
Landform: Terraces
Ecological site: Boreal Graminoid Peat Terrace, Depression (R231XY199AK)
Hydric soil status: Hydric

D31TE2—Boreal Terraces with Extensive Permafrost, Wet



Major land resource area: 231—Interior Alaska Highlands

Elevation: 197 to 600 meters

Mean annual precipitation: 233 to 539 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 50 to 110 days

Map Unit Composition

D31—Boreal taiga/tussock organic terraces, frozen: 78 percent

Dissimilar minor components: 22 percent

D31—Boreal Taiga/Tussock Organic Terraces, Frozen

Landform: Terraces

Landform position (three-dimensional): Treads

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 10 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 10.8 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum* (F231XY169AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 54 centimeters; silt loam

Cjff—54 to 152 centimeters; permanently frozen silt loam

Minor Components

D31—Boreal Forest Silty Drainages, Frozen

Percentage of map unit: 12 percent

Slope: 1 to 10 percent

Landform: Drainageways

Ecological site: *Betula neoalaskana/Alnus incana ssp. tenuifolia* (F231XY197AK)

Hydric soil status: Hydric

D31—Boreal Grass Organic Depressions

Percentage of map unit: 10 percent

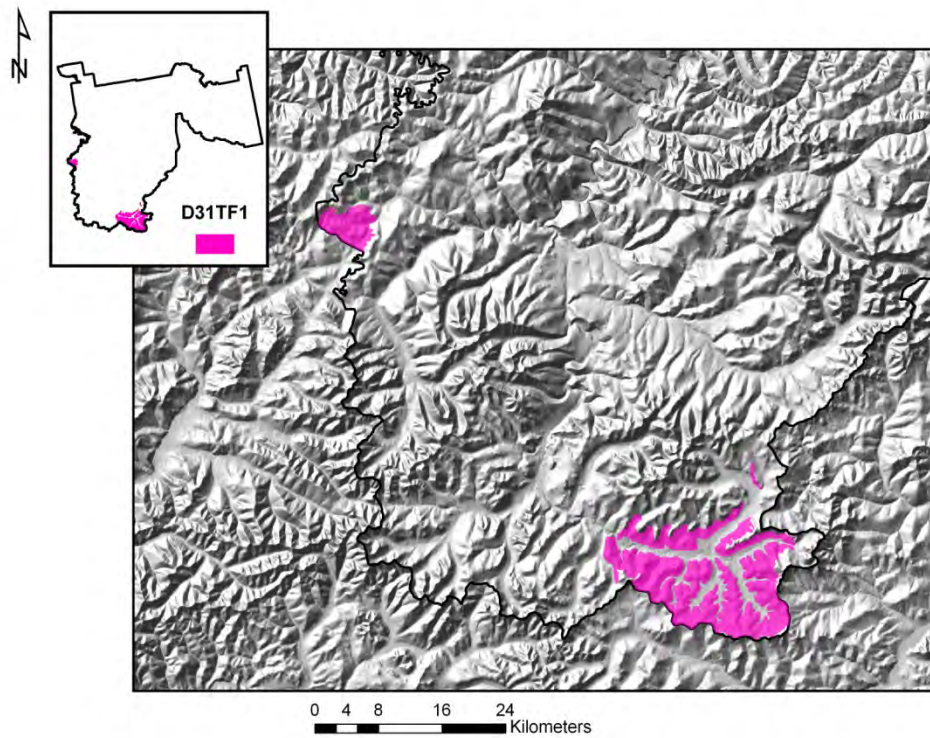
Slope: 0 to 1 percent

Landform: Terraces

Ecological site: Boreal Graminoid Peat Terrace, Depression (R231XY199AK)

Hydric soil status: Hydric

D31TF1—Subalpine Hills



Major land resource area: 231—Interior Alaska Highlands

Elevation: 800 to 1,350 meters

Mean annual precipitation: 278 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Subalpine woodland silty colluvial slopes: 55 percent

D31—Subalpine scrub loamy residual slopes: 34 percent

Dissimilar minor components: 11 percent

D31—Subalpine Woodland Silty Colluvial Slopes

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): West

Aspect (range): South to northeast (clockwise)

Slope range: 5 to 20 percent

Parent material: Organic material over gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 2 to 20 centimeters (perched)

Available water capacity (entire profile): Low (about 10.3 centimeters)

Land capability subclass (nonirrigated): 5w

Ecological site: *Picea glauca/Salix pulchra/Carex* (F231XY140AK)

Hydric soil status: Not hydric

Hydrologic soil group: C/D

Soil classification: Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryorthents

Typical profile:

O—0 to 15 centimeters; peat

A—15 to 22 centimeters; silt loam

BCg—22 to 47 centimeters; gravelly sandy loam

C—47 to 152 centimeters; very gravelly sandy loam

D31—Subalpine Scrub Loamy Residual Slopes

Landform: Hills

Landform position (two-dimensional): Summits, shoulders

Landform position (three-dimensional): Crests

Downslope shape: Linear

Across-slope shape: Convex

Slope range: 1 to 5 percent

Parent material: Organic material over gravelly residuum

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 3 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Somewhat excessively drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 7.8 centimeters)

Land capability subclass (nonirrigated): 4c

Ecological site: Subalpine Scrub Loamy Slopes (R231XY139AK)

Hydric soil status: Not hydric

Hydrologic soil group: B

Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Typical profile:

O—0 to 12 centimeters; slightly decomposed plant material

A—12 to 19 centimeters; loam

Bw—19 to 54 centimeters; very gravelly sandy loam

C—54 to 152 centimeters; extremely gravelly coarse sandy loam

Minor Components

D31—Subalpine Scrub Rocky Drainages

Percentage of map unit: 6 percent

Slope: 1 to 20 percent

Landform: Drainageways

Ecological site: Subalpine Scrub Loamy Drainages (R231XY152AK)

Hydric soil status: Hydric

D31—Subalpine Tussock-Scrub Loamy Colluvial Slopes, Frozen

Percentage of map unit: 5 percent

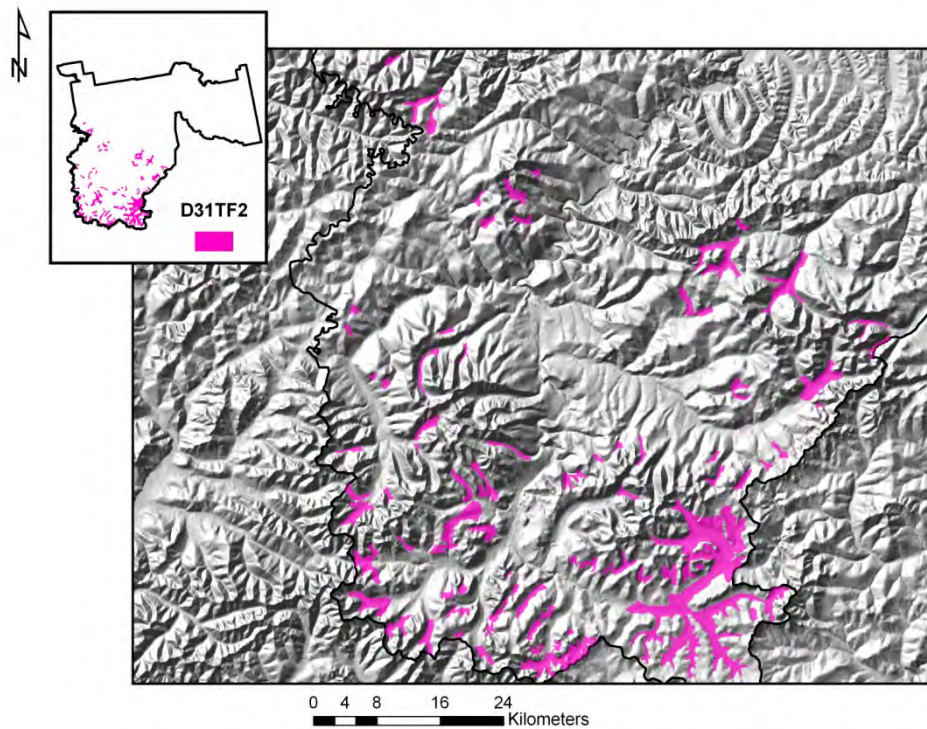
Slope: 1 to 20 percent

Landform: Mountains

Ecological site: Subalpine Scrub-Tussock Loamy Frozen Hummock (R231XY185AK)

Hydric soil status: Hydric

D31TF2—Subalpine Glaciated Hills



Major land resource area: 231—Interior Alaska Highlands

Elevation: 800 to 1,350 meters

Mean annual precipitation: 288 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 50 to 80 days

Map Unit Composition

D31—Subalpine tussock-scrub loamy colluvial slopes, frozen: 45 percent

D31—Subalpine scrub silty till slopes: 41 percent

Dissimilar minor components: 14 percent

D31—Subalpine Tussock-Scrub Loamy Colluvial Slopes, Frozen

Landform: Mountains

Landform position (two-dimensional): Footslopes, toeslopes

Landform position (three-dimensional): Base slopes

Downslope shape: Convex, linear

Across-slope shape: Linear, convex

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 1 to 20 percent

Parent material: Organic material over loess over loamy cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 2 to 20 centimeters (perched)

Available water capacity (entire profile): Low (about 10.9 centimeters)

Land capability subclass (nonirrigated): 4c

Ecological site: Subalpine Scrub-Tussock Loamy Frozen Hummock (R231XY185AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Typic Histoturbels

Typical profile:

Oi—0 to 22 centimeters; peat

A—22 to 27 centimeters; silt loam

Cgjj—27 to 60 centimeters; stony loam

Cf—60 to 152 centimeters; permanently frozen stony loam

D31—Subalpine Scrub Silty Till Slopes

Landform: Mountains

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): South

Aspect (range): East to west (clockwise)

Slope range: 5 to 40 percent

Parent material: Organic material over loess over gravelly till

Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 11 centimeters)
Land capability subclass (nonirrigated): 4w
Ecological site: Subalpine Scrub Loamy Hummock (R231XY148AK)
Hydric soil status: Not hydric
Hydrologic soil group: B
Soil classification: Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryorthents
Typical profile:
O—0 to 10 centimeters; slightly decomposed plant material
A—10 to 21 centimeters; silt loam
2BC—21 to 37 centimeters; very stony sandy loam
2C—37 to 152 centimeters; very stony sandy loam

Minor Components

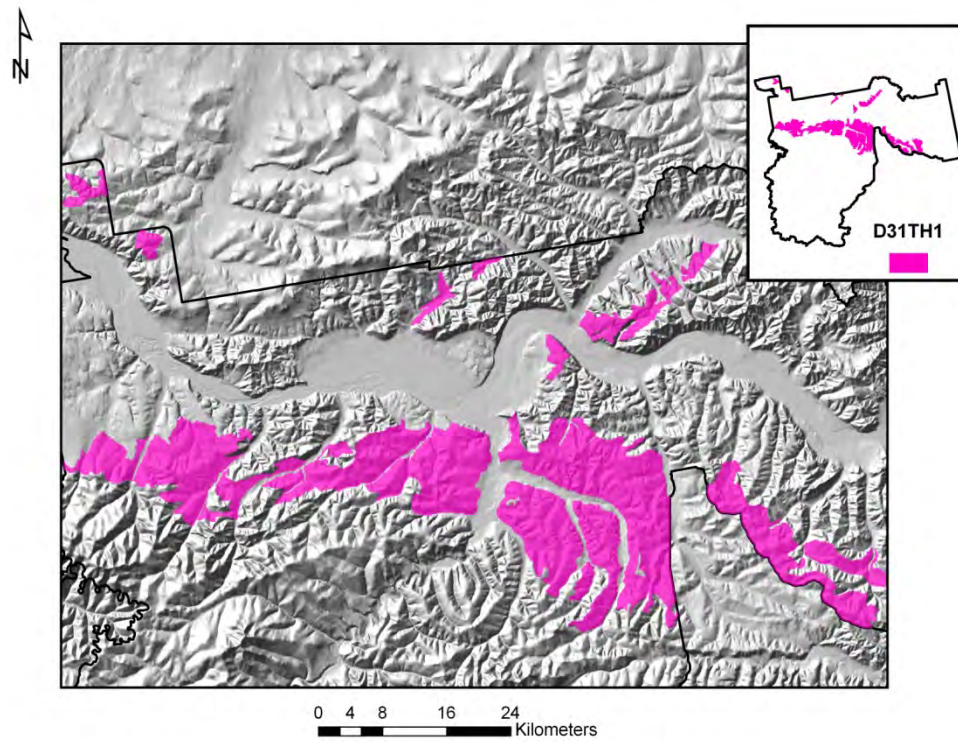
D31—Subalpine Scrub Rocky Drainages

Percentage of map unit: 8 percent
Slope: 1 to 20 percent
Landform: Drainageways
Ecological site: Subalpine Scrub Loamy Drainages (R231XY152AK)
Hydric soil status: Hydric

D31—Subalpine Grass Organic Swales

Percentage of map unit: 6 percent
Slope: 0 to 5 percent
Landform: Hills
Ecological site: Subalpine Graminoid Peat Swale (R231XY149AK)
Hydric soil status: Hydric

D31TH1—Boreal Hills with Extensive Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 200 to 1,000 meters

Mean annual precipitation: 242 to 705 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal taiga silty colluvial slopes, frozen: 28 percent

D31—Boreal taiga organic eolian slopes, frozen: 22 percent

D31—Boreal taiga gravelly colluvial slopes: 19 percent

D31—Boreal woodland silty eolian slopes, frozen: 17 percent

Dissimilar minor components: 14 percent

D31—Boreal Taiga Silty Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 5 to 50 percent

Parent material: Organic material over silty colluvium

Depth to restrictive feature: 50 to 100 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 40 to 60 centimeters (perched)

Available water capacity (entire profile): Low (about 11.6 centimeters)

Land capability subclass (nonirrigated): 6s

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic
Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 28 centimeters; silt loam

C—28 to 60 centimeters; silt loam

Cf—60 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Organic Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Footslopes, toeslopes

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 40 to 90 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Very poorly drained
Flooding frequency: None
Ponding frequency: Frequent
Depth to seasonal water table: At the soil surface (perched)
Available water capacity (entire profile): Low (about 9.5 centimeters)
Land capability subclass (nonirrigated): 7s
Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)
Hydric soil status: Hydric
Hydrologic soil group: D
Soil classification: Loamy, mixed, euic, subgelic Terric Fibristsels
Typical profile:
Oi—0 to 42 centimeters; peat
Cjj—42 to 48 centimeters; silt loam
Cf—48 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Gravelly Colluvial Slopes

Landform: Hills
Landform position (two-dimensional): Backslopes
Downslope shape: Linear
Across-slope shape: Linear
Aspect (representative): East
Aspect (range): North to south (clockwise)
Slope range: 10 to 50 percent
Parent material: Organic material over loess over gravelly colluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Well drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Moderate (about 17 centimeters)
Land capability subclass (nonirrigated): 7e
Ecological site: *Picea mariana-Betula neoalaskana/Vaccinium uliginosum/Cladonia* (F231XY162AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts
Typical profile:
O—0 to 4 centimeters; slightly decomposed plant material
A—4 to 8 centimeters; silt loam

Bw—8 to 36 centimeters; gravelly sandy loam

C—36 to 152 centimeters; extremely gravelly loamy very fine sand

D31—Boreal Woodland Silty Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): North

Aspect (range): Southwest to east (clockwise)

Slope range: 10 to 75 percent

Parent material: Mossy organic material over gravelly cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 2 to 25 centimeters (perched)

Available water capacity (entire profile): Low (about 8.2 centimeters)

Land capability subclass (nonirrigated): 6e

Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy-skeletal, mixed, superactive, acid, subgelic Typic Histoturbels

Typical profile:

Oi—0 to 25 centimeters; peat

Cjj—25 to 50 centimeters; gravelly silt loam

Cf—50 to 152 centimeters; permanently frozen very gravelly sandy loam

Minor Components

D31—Boreal Forest Loamy Depressions, Frozen

Percentage of map unit: 8 percent

Slope: 20 to 55 percent

Landform: Hills

Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum* (F231XY111AK)

Hydric soil status: Not hydric

D31—Boreal Taiga Silty Drainages, Frozen

Percentage of map unit: 6 percent

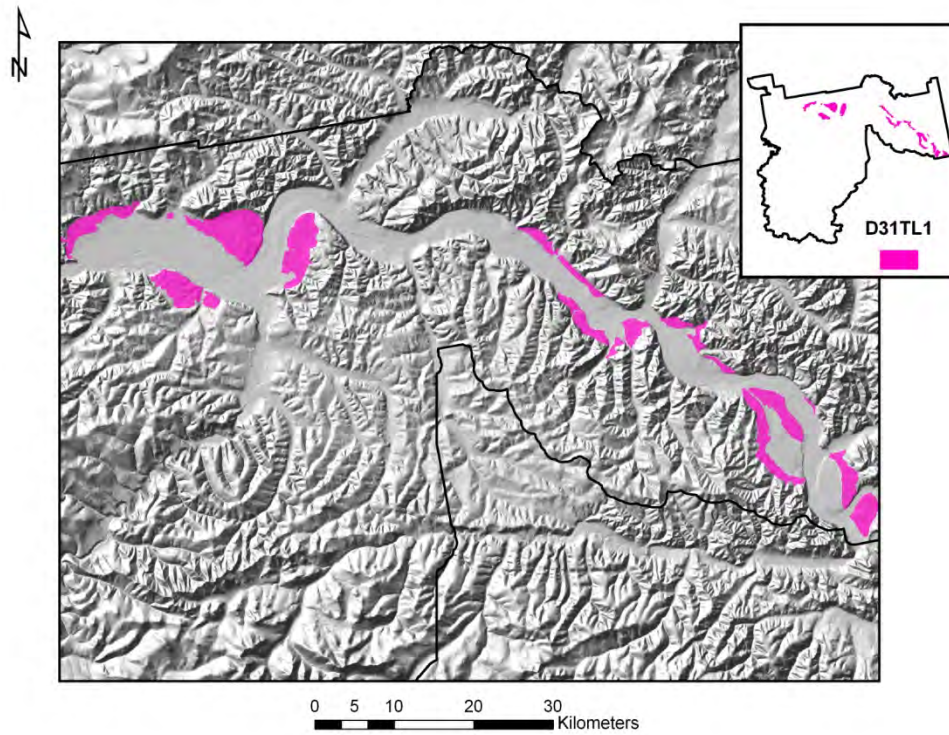
Slope: 1 to 15 percent

Landform: Drainageways

Ecological site: *Picea mariana/Salix-Ledum groenlandicum* (F231XY193AK)

Hydric soil status: Hydric

D31TL1—Boreal Eolian Plains with Extensive Permafrost, Moist



Major land resource area: 231—Interior Alaska Highlands

Elevation: 200 to 900 meters

Mean annual precipitation: 242 to 705 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal taiga organic eolian slopes, frozen: 44 percent

D31—Boreal taiga silty eolian slopes, frozen: 39 percent

Dissimilar minor components: 17 percent

D31—Boreal Taiga Organic Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Footslopes, toeslopes

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 40 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 9.5 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 48 centimeters; silt loam

Cf—48 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Silty Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Shoulders

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over loamy cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 40 to 60 centimeters (perched)
Available water capacity (entire profile): Low (about 10.7 centimeters)
Land capability subclass (nonirrigated): 6s
Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic
Haploturbels
Typical profile:
Oi—0 to 21 centimeters; slightly decomposed plant material
A—21 to 28 centimeters; silt loam
Cjj—28 to 53 centimeters; silt loam
Cf—53 to 152 centimeters; permanently frozen silt loam

Minor Components

D31—Boreal Forest Loamy Colluvial Slopes

Percentage of map unit: 10 percent
Slope: 5 to 35 percent
Landform: Escarpments
Ecological site: *Picea glauca/Alnus-Rosa acicularis* (F231XY117AK)
Hydric soil status: Not hydric

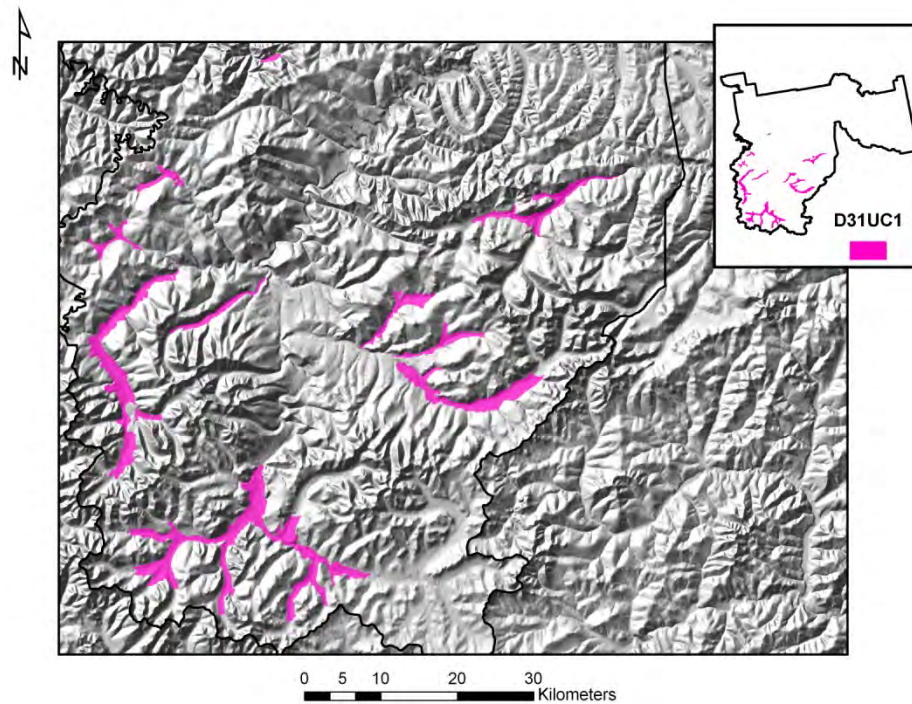
D31—Boreal Taiga Gravelly Drainages

Percentage of map unit: 4 percent
Slope: 5 to 80 percent
Landform: Drainageways
Ecological site: *Picea mariana/Alnus viridis ssp. fruticosa/Calamagrostis canadensis*
(F231XY192AK)
Hydric soil status: Not hydric

D31—Boreal Moss Organic Depressions

Percentage of map unit: 3 percent
Slope: 0 to 1 percent
Landform: Loess plains
Ecological site: Boreal Moss Peat Plain (R231XY150AK)
Hydric soil status: Hydric

D31UC1—Boreal Eolian Hills with Common Permafrost, Wet



Major land resource area: 231—Interior Alaska Highlands

Elevation: 100 to 2,000 meters

Mean annual precipitation: 233 to 783 millimeters

Mean annual air temperature: -6 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal tussock organic plains, frozen: 42 percent

D31—Boreal taiga organic eolian slopes, frozen: 24 percent

D31—Boreal forest loamy high flood plains: 21 percent

Dissimilar minor components: 13 percent

D31—Boreal Tussock Organic Plains, Frozen

Landform: Plains

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 20 percent

Parent material: Organic material over loess over loamy cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 11.9 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: Boreal Tussock Peat Plains (R231XY128AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, dysic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 41 centimeters; peat

A—41 to 49 centimeters; silt loam

Cjj—49 to 56 centimeters; loam

Cf—56 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Organic Eolian Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Footslopes, toeslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): North

Aspect (range): Northwest to south (clockwise)

Slope range: 1 to 40 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 40 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Very poorly drained
Flooding frequency: None
Ponding frequency: Frequent
Depth to seasonal water table: At the soil surface (perched)
Available water capacity (entire profile): Low (about 9.5 centimeters)
Land capability subclass (nonirrigated): 7s
Ecological site: *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK)
Hydric soil status: Hydric
Hydrologic soil group: D
Soil classification: Loamy, mixed, euic, subgelic Terric Fibristsels
Typical profile:
 Oi—0 to 42 centimeters; peat
 Cjj—42 to 48 centimeters; silt loam
 Cf—48 to 152 centimeters; permanently frozen silt loam

D31—Boreal Forest Loamy High Flood Plains

Landform: High flood plains
Downslope shape: Convex
Across-slope shape: Convex
Slope range: 1 to 10 percent
Parent material: Organic material over sandy and gravelly alluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 3 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Well drained
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 11.9 centimeters)
Land capability subclass (nonirrigated): 4c
Ecological site: *Picea glauca/Rosa acicularis/Lupinus arcticus* (F231XY131AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Sandy or sandy-skeletal, mixed Typic Cryorthents
Typical profile:
 O—0 to 13 centimeters; slightly decomposed plant material
 A—13 to 18 centimeters; sandy loam
 C—18 to 152 centimeters; stratified very gravelly loamy coarse sand to gravelly sandy loam

Minor Components

D31—Boreal Woodland Rocky Low Flood Plains

Percentage of map unit: 9 percent
Slope: 1 to 5 percent
Landform: Low flood plains

Ecological site: Populus balsamifera/Salix alaxensis/Calamagrostis canadensis
(F231XY130AK)

Hydric soil status: Not hydric

D31—Boreal Water, Flowing

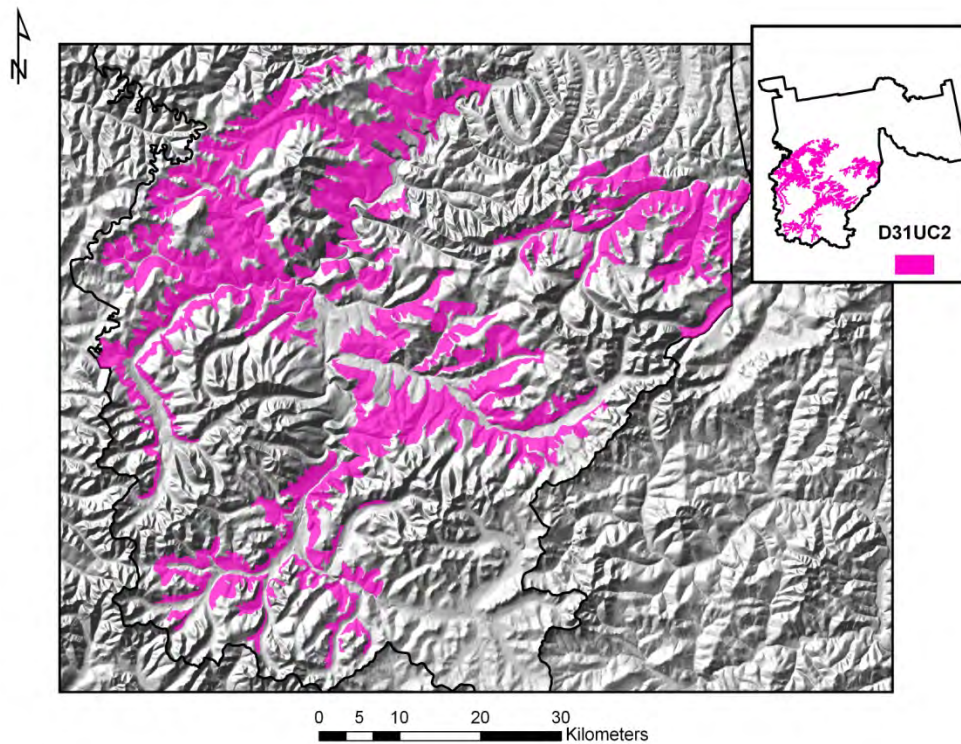
Percentage of map unit: 4 percent

Slope: 0 to 2 percent

Ecological site: Boreal Water, Non-Vegetated (R231XY194AK)

Hydric soil status: Not rated

D31UC2—Subalpine and Boreal Hills



Major land resource area: 231—Interior Alaska Highlands

Elevation: 307 to 1,300 meters

Mean annual precipitation: 244 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Subalpine woodland silty colluvial slopes, frozen: 40 percent

D31—Boreal forest gravelly colluvial slopes, frozen: 31 percent

Dissimilar minor components: 29 percent

D31—Subalpine Woodland Silty Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear, concave

Aspect (representative): West

Aspect (range): South to northeast (clockwise)

Slope range: 15 to 65 percent

Parent material: Organic material over loess over gravelly colluvium

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 40 to 60 centimeters (perched)

Available water capacity (entire profile): Low (about 13.5 centimeters)

Land capability subclass (nonirrigated): 7e

Ecological site: *Picea glauca*/*Salix-Vaccinium uliginosum* (F231XY184AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

A—21 to 30 centimeters; silt loam

C—30 to 64 centimeters; gravelly sandy loam

Cf—64 to 152 centimeters; permanently frozen very gravelly sandy loam

D31—Boreal Forest Gravelly Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northeast

Aspect (range): North to south (clockwise)

Slope range: 15 to 65 percent

Parent material: Organic material over gravelly colluvium
Depth to restrictive feature: 50 to 90 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 5 to 25 centimeters (perched)
Available water capacity (entire profile): Low (about 8.9 centimeters)
Land capability subclass (nonirrigated): 6e
Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum* (F231XY111AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Soil classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels
Typical profile:
Oi—0 to 21 centimeters; slightly decomposed plant material
A—21 to 26 centimeters; silt loam
C—26 to 58 centimeters; very gravelly fine sandy loam
Cf—58 to 152 centimeters; permanently frozen extremely stony sandy loam

Minor Components

D31—Subalpine Woodland Rocky Colluvial Slopes, Cold

Percentage of map unit: 13 percent
Slope: 5 to 70 percent
Landform: Mountains
Ecological site: *Picea mariana/Betula glandulosa* (F231XY124AK)
Hydric soil status: Not hydric

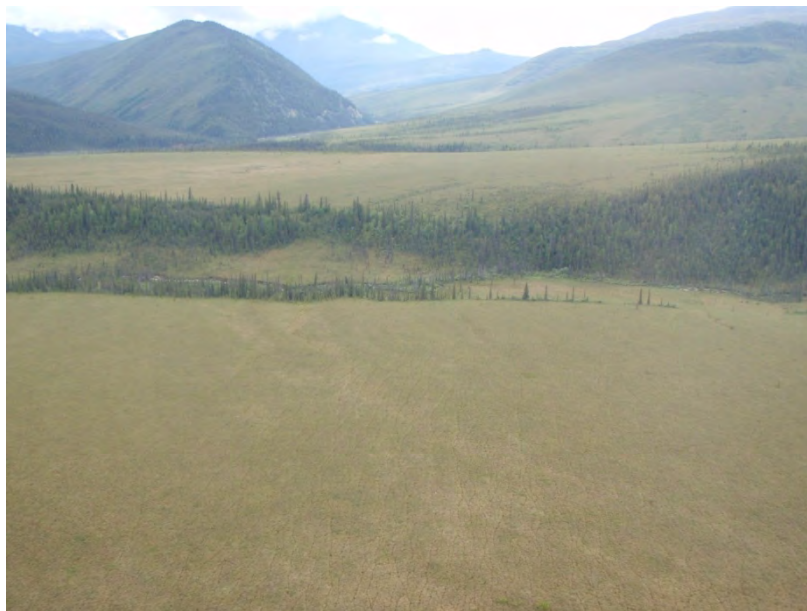
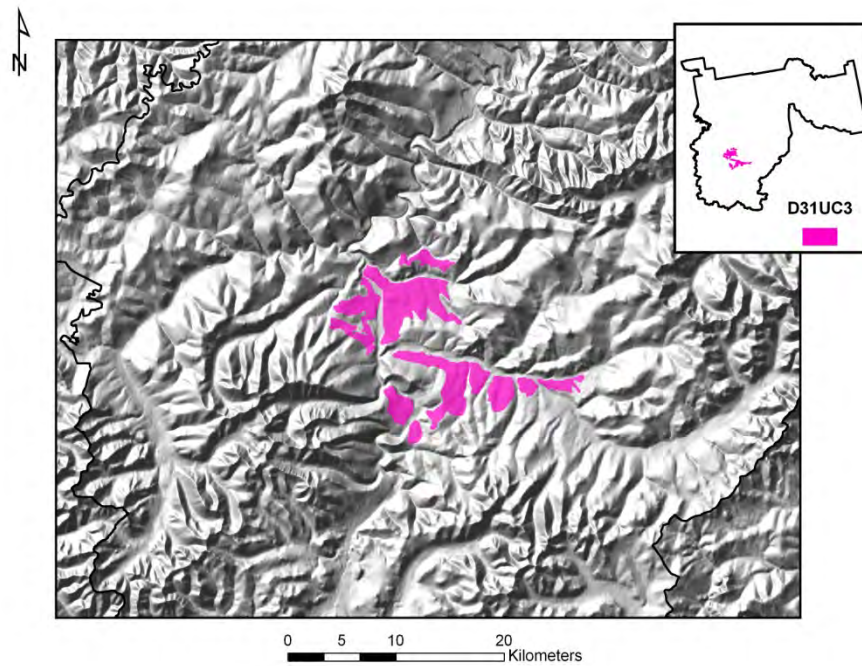
D31—Subalpine Scrub Loamy Colluvial Slopes, Frozen

Percentage of map unit: 10 percent
Slope: 5 to 25 percent
Landform: Hills
Ecological site: Subalpine Scrub Loamy Frozen Circles (R231XY129AK)
Hydric soil status: Hydric

D31—Boreal Scrub Rocky Drainages

Percentage of map unit: 6 percent
Slope: 3 to 20 percent
Landform: Drainageways
Ecological site: Boreal Scrub Gravelly Drainages (R231XY195AK)
Hydric soil status: Not hydric

D31UC3—Boreal Plains with Extensive Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 200 to 1,050 meters

Mean annual precipitation: 245 to 783 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Map Unit Composition

D31—Boreal tussock organic plains, frozen: 65 percent

D31—Boreal taiga silty colluvial slopes, frozen: 18 percent

Dissimilar minor components: 17 percent

D31—Boreal Tussock Organic Plains, Frozen

Landform: Plains

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 10 percent

Parent material: Organic material over loess over loamy cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 11.9 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: Boreal Tussock Peat Plains (R231XY128AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, dysic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 41 centimeters; peat

A—41 to 49 centimeters; silt loam

Cjj—49 to 56 centimeters; loam

Cf—56 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Silty Colluvial Slopes, Frozen

Landform: Hills

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northwest

Aspect (range): Southwest to northeast (clockwise)

Slope range: 5 to 50 percent

Parent material: Organic material over silty colluvium

Depth to restrictive feature: 50 to 100 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 40 to 60 centimeters (perched)
Available water capacity (entire profile): Low (about 11.6 centimeters)
Land capability subclass (nonirrigated): 6s
Ecological site: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*
(F231XY111AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Soil classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic
Haplorthels
Typical profile:
Oi—0 to 21 centimeters; slightly decomposed plant material
A—21 to 28 centimeters; silt loam
C—28 to 60 centimeters; silt loam
Cf—60 to 152 centimeters; permanently frozen silt loam

Minor Components

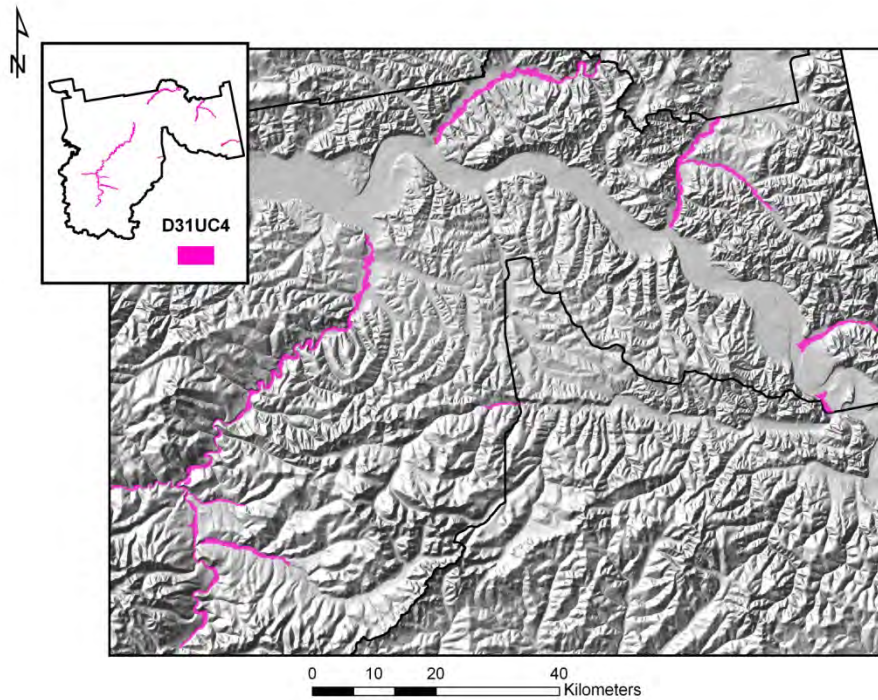
D31—Boreal Taiga Silty Drainages, Frozen

Percentage of map unit: 10 percent
Slope: 1 to 15 percent
Landform: Drainageways
Ecological site: *Picea mariana/Salix-Ledum groenlandicum* (F231XY193AK)
Hydric soil status: Hydric

D31—Boreal Forest Rocky Colluvial Slopes

Percentage of map unit: 7 percent
Slope: 15 to 70 percent
Landform: Hills
Ecological site: *Picea glauca-Betula neoalaskana/Alnus viridis ssp. fruticosa-Rosa*
acicularis (F231XY182AK)
Hydric soil status: Not hydric

D31UC4—Boreal Flood Plains with Common Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 150 to 810 meters

Mean annual precipitation: 233 to 705 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 50 to 110 days

Map Unit Composition

D31—Boreal woodland rocky low flood plains: 32 percent

D31—Boreal forest loamy high flood plains: 25 percent

Dissimilar minor components: 43 percent

D31—Boreal Woodland Rocky Low Flood Plains

Landform: Low flood plains

Downslope shape: Linear

Across-slope shape: Convex

Slope range: 1 to 5 percent

Parent material: Sandy and gravelly alluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): High

Natural drainage class: Moderately well drained

Flooding frequency: Frequent

Ponding frequency: None

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Very low (about 5.2 centimeters)

Land capability subclass (nonirrigated): 6w

Ecological site: *Populus balsamifera/Salix alaxensis/Calamagrostis canadensis*
(F231XY130AK)

Hydric soil status: Not hydric

Hydrologic soil group: B

Soil classification: Sandy or sandy-skeletal, mixed Typic Cryorthents

Typical profile:

C1—0 to 30 centimeters; very cobbly coarse sandy loam

C2—30 to 152 centimeters; extremely gravelly loamy coarse sand

D31—Boreal Forest Loamy High Flood Plains

Landform: High flood plains

Downslope shape: Convex

Across-slope shape: Convex

Slope range: 1 to 12 percent

Parent material: Organic material over sandy and gravelly alluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 3 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Well drained

Flooding frequency: Rare

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 11.9 centimeters)

Land capability subclass (nonirrigated): 4c

Ecological site: *Picea glauca/Rosa acicularis/Lupinus arcticus* (F231XY131AK)

Hydric soil status: Not hydric

Hydrologic soil group: A

Soil classification: Sandy or sandy-skeletal, mixed Typic Cryorthents

Typical profile:

O—0 to 13 centimeters; slightly decomposed plant material

A—13 to 18 centimeters; sandy loam

C—18 to 152 centimeters; stratified very gravelly loamy coarse sand to gravelly sandy loam

Minor Components

D31—Boreal Taiga/Tussock Organic Terraces, Frozen

Percentage of map unit: 13 percent

Slope: 0 to 25 percent

Landform: Terraces

Ecological site: *Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum* (F231XY169AK)

Hydric soil status: Hydric

D31—Boreal Scrub Organic Depressions

Percentage of map unit: 11 percent

Slope: 0 to 5 percent

Landform: Terraces

Ecological site: Boreal Scrub Peat Floodplain (R231XY137AK)

Hydric soil status: Hydric

D31—Boreal Riverwash

Percentage of map unit: 10 percent

Slope: 0 to 5 percent

Landform: Very low flood plains

Ecological site: Boreal Gravelly Floodplain, Non-Vegetated (R231XY126AK)

Hydric soil status: Not hydric

D31—Boreal Forest Loamy High Flood Plains, Frozen

Percentage of map unit: 9 percent

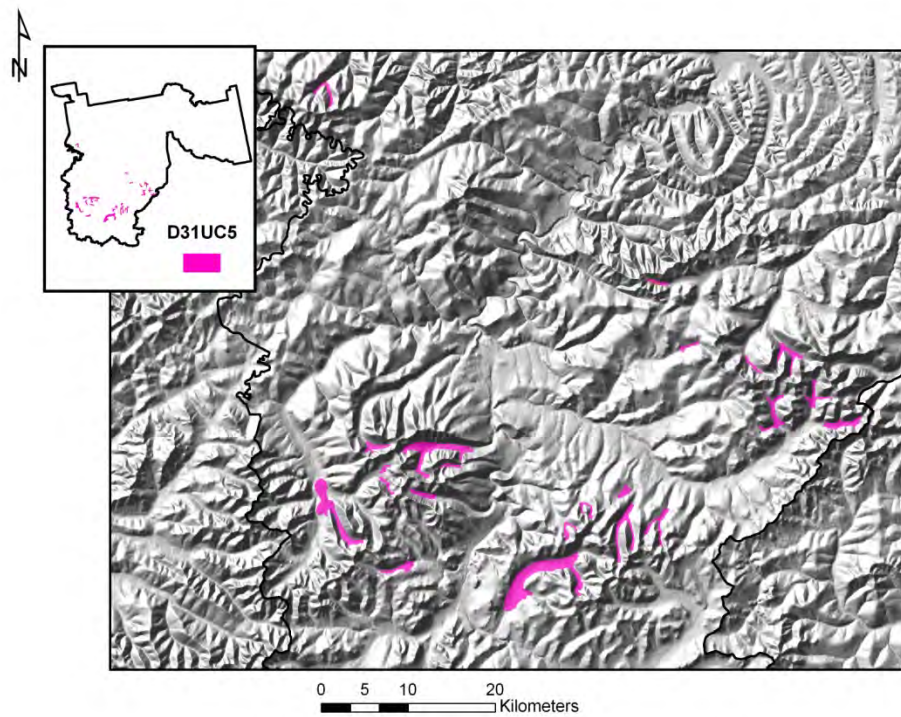
Slope: 1 to 3 percent

Landform: High flood plains

Ecological site: *Picea glauca/Alnus viridis ssp. fruticosa* (F231XY151AK)

Hydric soil status: Not hydric

D31UC5—Alpine Glaciated Mountains



Major land resource area: 231—Interior Alaska Highlands

Elevation: 800 to 1,800 meters

Mean annual precipitation: 288 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 50 to 80 days

Map Unit Composition

D31—Subalpine scrub silty till slopes: 35 percent

D31—Alpine scrub gravelly circles, acid: 30 percent

Dissimilar minor components: 35 percent

D31—Subalpine Scrub Silty Till Slopes

Landform: Mountains

Landform position (two-dimensional): Backslopes

Landform position (three-dimensional): Side slopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): South

Aspect (range): East to west (clockwise)

Slope range: 5 to 40 percent

Parent material: Organic material over loess over gravelly till

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Somewhat poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not present within a depth of 160 centimeters

Available water capacity (entire profile): Low (about 11 centimeters)

Land capability subclass (nonirrigated): 4w

Ecological site: Subalpine Scrub Loamy Hummock (R231XY148AK)

Hydric soil status: Not hydric

Hydrologic soil group: B

Soil classification: Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryorthents

Typical profile:

O—0 to 10 centimeters; slightly decomposed plant material

A—10 to 21 centimeters; silt loam

2BC—21 to 37 centimeters; very stony sandy loam

2C—37 to 152 centimeters; very stony sandy loam

D31—Alpine Scrub Gravelly Circles, Acid

Landform: Mountains

Landform position (two-dimensional): Summits, footslopes

Landform position (three-dimensional): Base slopes, crests

Downslope shape: Convex

Across-slope shape: Convex

Aspect (representative): South

Aspect (range): East to northwest (clockwise)

Slope range: 1 to 15 percent

Parent material: Organic material over gravelly cryoturbate

Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Somewhat excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: Not present within a depth of 160 centimeters
Available water capacity (entire profile): Low (about 13.3 centimeters)
Land capability subclass (nonirrigated): 4c
Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Gravelly Hummock (R231XY101AK)
Hydric soil status: Not hydric
Hydrologic soil group: A
Soil classification: Loamy-skeletal, mixed, superactive, acid, subgelic Typic Haplogelepts
Typical profile:
O—0 to 3 centimeters; slightly decomposed plant material
A—3 to 12 centimeters; silt loam
Bw—12 to 35 centimeters; very gravelly sandy loam
C—35 to 152 centimeters; very cobbly sandy loam

Minor Components

D31—Alpine Scrub Loamy Hummocks, Frozen

Percentage of map unit: 13 percent
Slope: 1 to 20 percent
Landform: Mountains
Ecological site: Alpine Dwarf Scrub-Lichen Mosaic Peat Hummock (R231XY114AK)
Hydric soil status: Not hydric

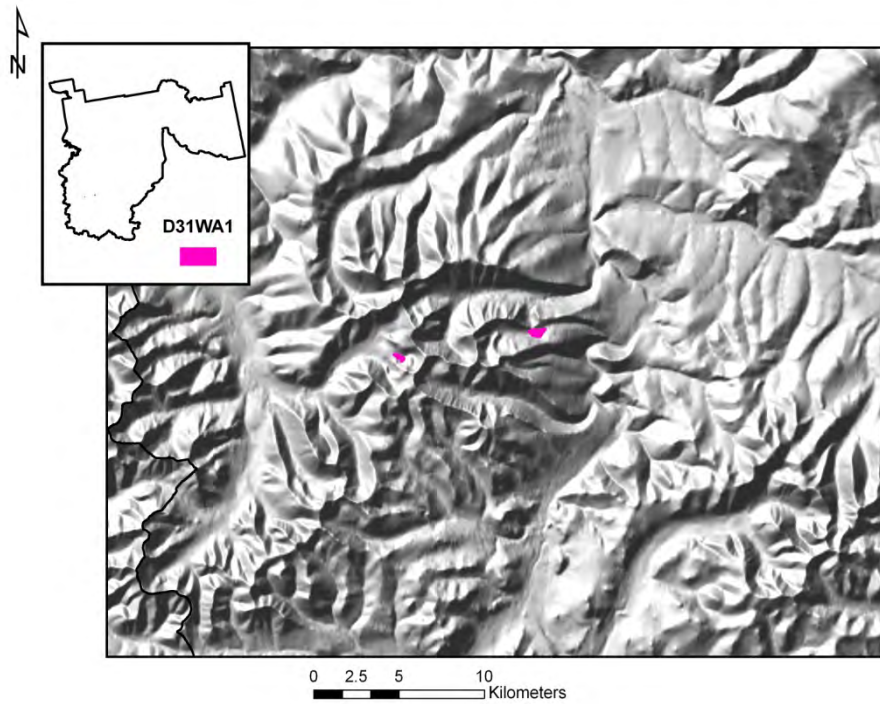
D31—Subalpine Tussock-Scrub Loamy Colluvial Slopes, Frozen

Percentage of map unit: 12 percent
Slope: 1 to 20 percent
Landform: Mountains
Ecological site: Subalpine Scrub-Tussock Loamy Frozen Hummock (R231XY185AK)
Hydric soil status: Hydric

D31—Subalpine Scrub Rocky Drainages

Percentage of map unit: 10 percent
Slope: 1 to 20 percent
Landform: Drainageways
Ecological site: Subalpine Scrub Loamy Drainages (R231XY152AK)
Hydric soil status: Hydric

D31WA1—Alpine and Subalpine Water



Major land resource area: 231—Interior Alaska Highlands

Elevation: 610 to 2,000 meters

Mean annual precipitation: 233 to 824 millimeters

Mean annual air temperature: -7 to -2 degrees C

Frost-free period: 50 to 110 days

Map Unit Composition

D31—Alpine water, ponded: 95 percent

Dissimilar minor component: 5 percent

D31—Alpine Water, Ponded

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 150 centimeters

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Unspecified

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not applicable

Land capability subclass (nonirrigated): 8w

Ecological site: Boreal Water, Non-Vegetated (R231XY194AK)

Hydric soil status: Not rated

Hydrologic soil group: D

Typical profile:

W—0 to 152 centimeters; water

Minor Component

D31—Subalpine Scrub Rocky Drainages

Percentage of map unit: 5 percent

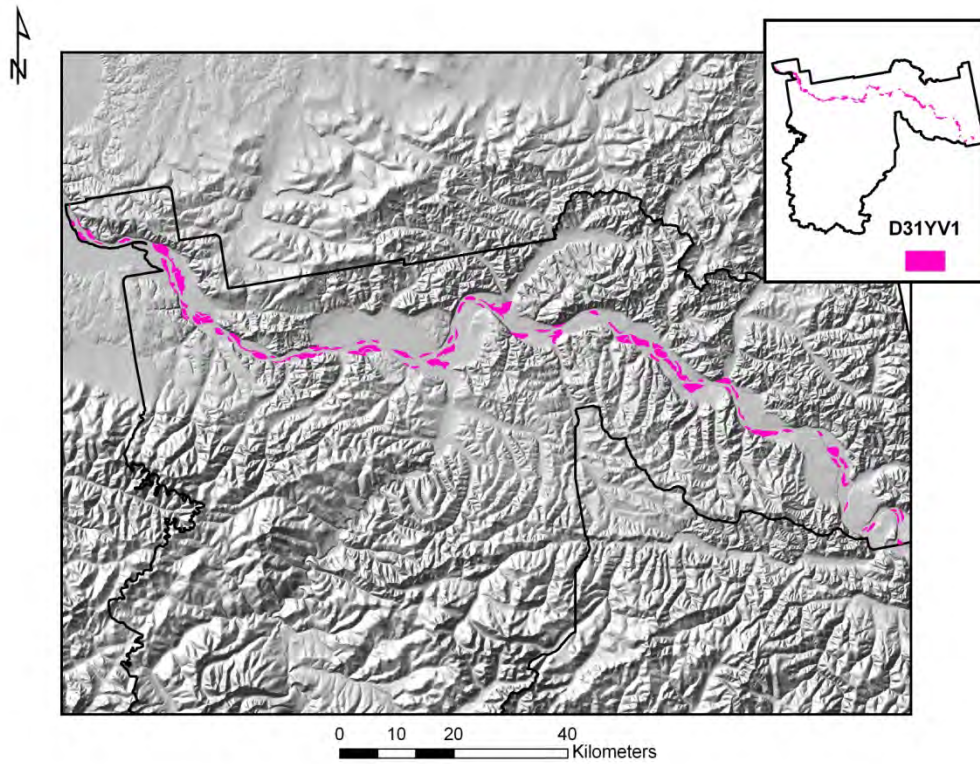
Slope: 1 to 20 percent

Landform: Drainageways

Ecological site: Subalpine Scrub Loamy Drainages (R231XY152AK)

Hydric soil status: Hydric

D31YV1—Boreal Flood Plains, Wet



Major land resource area: 231—Interior Alaska Highlands

Elevation: 150 to 620 meters

Mean annual precipitation: 233 to 539 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 50 to 110 days

Map Unit Composition

D31—Boreal forest loamy mid flood plains: 36 percent

D31—Boreal taiga loamy high flood plains, frozen: 32 percent

D31—Boreal scrub sandy low flood plains: 26 percent

Dissimilar minor component: 6 percent

D31—Boreal Forest Loamy Mid Flood Plains

Landform: Mid flood plains

Landform position (three-dimensional): Treads

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 1 to 15 percent

Parent material: Organic material over loamy alluvium

Depth to restrictive feature: None within a depth of 150 centimeters

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: 1 percent

Slowest capacity to transmit water (Ksat): Moderately high

Natural drainage class: Well drained

Flooding frequency: Occasional

Ponding frequency: None

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Very high (about 37.8 centimeters)

Land capability subclass (nonirrigated): 4w

Ecological site: *Populus balsamifera* (F231XY189AK)

Hydric soil status: Not hydric

Hydrologic soil group: B

Soil classification: Coarse-loamy, mixed, superactive, calcareous Typic Cryofluvents

Typical profile:

O—0 to 5 centimeters; slightly decomposed plant material

C1—5 to 76 centimeters; stratified loamy sand to sandy loam

C2—76 to 152 centimeters; stratified loamy sand to sandy loam

D31—Boreal Taiga Loamy High Flood Plains, Frozen

Landform: High flood plains

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 20 percent

Parent material: Organic material over loamy alluvium

Depth to restrictive feature: 50 to 120 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Somewhat poorly drained
Flooding frequency: Rare
Ponding frequency: None
Depth to seasonal water table: At the soil surface (perched)
Available water capacity (entire profile): Moderate (about 18.8 centimeters)
Land capability subclass (nonirrigated): 4s
Ecological site: *Picea glauca* (F231XY196AK)
Hydric soil status: Not hydric
Hydrologic soil group: D
Soil classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Fluventic Haplorthels
Typical profile:
Oi—0 to 9 centimeters; slightly decomposed plant material
C—9 to 77 centimeters; stratified sandy loam to silt loam
Cf—77 to 152 centimeters; stratified permanently frozen sandy loam to silt loam

D31—Boreal Scrub Sandy Low Flood Plains

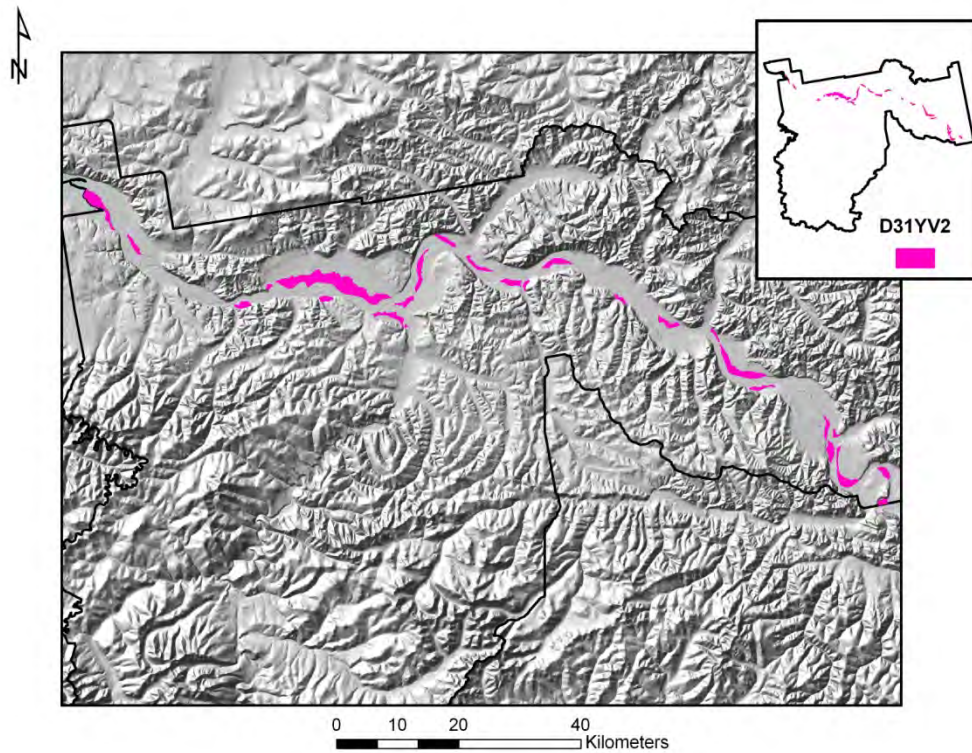
Landform: Low flood plains
Downslope shape: Linear
Across-slope shape: Linear
Slope range: 0 to 10 percent
Parent material: Loamy alluvium
Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 2)
Salinity (maximum based on representative value): Slightly saline (about 4.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: 1 percent
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Well drained
Flooding frequency: Frequent
Ponding frequency: None
Depth to seasonal water table: At the soil surface (perched)
Available water capacity (entire profile): Very high (about 32.7 centimeters)
Land capability subclass (nonirrigated): 5w
Ecological site: Boreal Scrub Sandy Floodplain, Low (R231XY198AK)
Hydric soil status: Not hydric
Hydrologic soil group: C
Soil classification: Coarse-loamy, mixed, superactive, calcareous Typic Cryofluvents
Typical profile:
C1—0 to 78 centimeters; stratified loamy sand to sandy loam
C2—78 to 152 centimeters; stratified gravelly sandy loam to fine sandy loam

Minor Component

D31—Boreal Riverwash

Percentage of map unit: 6 percent
Slope: 0 to 5 percent
Landform: Very low flood plains
Ecological site: Boreal Gravelly Floodplain, Non-Vegetated (R231XY126AK)
Hydric soil status: Not hydric

D31YV2—Boreal Terraces and Flood Plains with Common Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 100 to 2,000 meters

Mean annual precipitation: 233 to 705 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 50 to 110 days

Map Unit Composition

D31—Boreal taiga/tussock organic terraces, frozen: 55 percent

D31—Boreal taiga loamy high flood plains, frozen: 32 percent

Dissimilar minor components: 13 percent

D31—Boreal Taiga/Tussock Organic Terraces, Frozen

Landform: Terraces

Landform position (three-dimensional): Treads

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 10 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 10.8 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum*
(F231XY169AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 54 centimeters; silt loam

Cjff—54 to 152 centimeters; permanently frozen silt loam

D31—Boreal Taiga Loamy High Flood Plains, Frozen

Landform: High flood plains

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 10 percent

Parent material: Organic material over loamy alluvium

Depth to restrictive feature: 50 to 120 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Somewhat poorly drained

Flooding frequency: Rare

Ponding frequency: None

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Moderate (about 18.8 centimeters)

Land capability subclass (nonirrigated): 4s

Ecological site: *Picea glauca* (F231XY196AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Fluventic

Haplorthels

Typical profile:

Oi—0 to 9 centimeters; slightly decomposed plant material

C—9 to 77 centimeters; stratified sandy loam to silt loam

Cf—77 to 152 centimeters; stratified permanently frozen sandy loam to silt loam

Minor Components

D31—Boreal Water, Ponded

Percentage of map unit: 7 percent

Slope: 0 to 2 percent

Ecological site: Boreal Water, Non-Vegetated (R231XY194AK)

Hydric soil status: Not rated

D31—Boreal Scrub Organic Depressions

Percentage of map unit: 6 percent

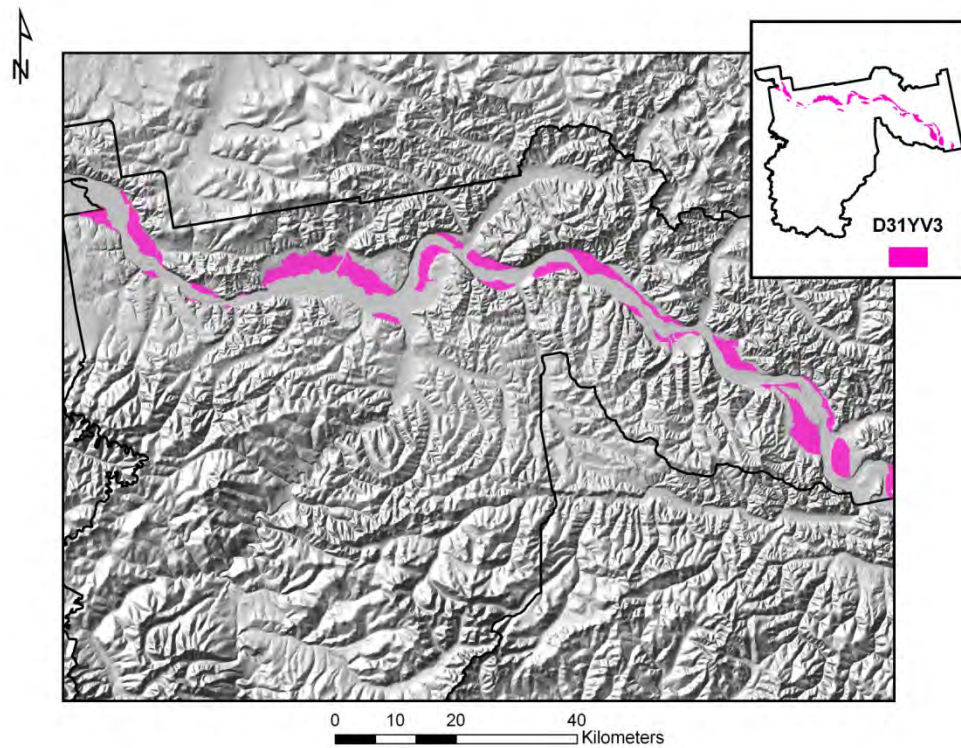
Slope: 0 to 5 percent

Landform: Terraces

Ecological site: Boreal Scrub Peat Floodplain (R231XY137AK)

Hydric soil status: Hydric

D31YV3—Boreal Terraces with Extensive Permafrost



Major land resource area: 231—Interior Alaska Highlands

Elevation: 200 to 600 meters

Mean annual precipitation: 234 to 539 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 50 to 110 days

Map Unit Composition

D31—Boreal taiga/tussock organic terraces, frozen: 90 percent

Dissimilar minor component: 10 percent

D31—Boreal Taiga/Tussock Organic Terraces, Frozen

Landform: Terraces

Landform position (three-dimensional): Treads

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 10 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 10.8 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum*
(F231XY169AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 42 centimeters; peat

Cjj—42 to 54 centimeters; silt loam

Cjff—54 to 152 centimeters; permanently frozen silt loam

Minor Component

D31—Boreal Grass Organic Depressions

Percentage of map unit: 10 percent

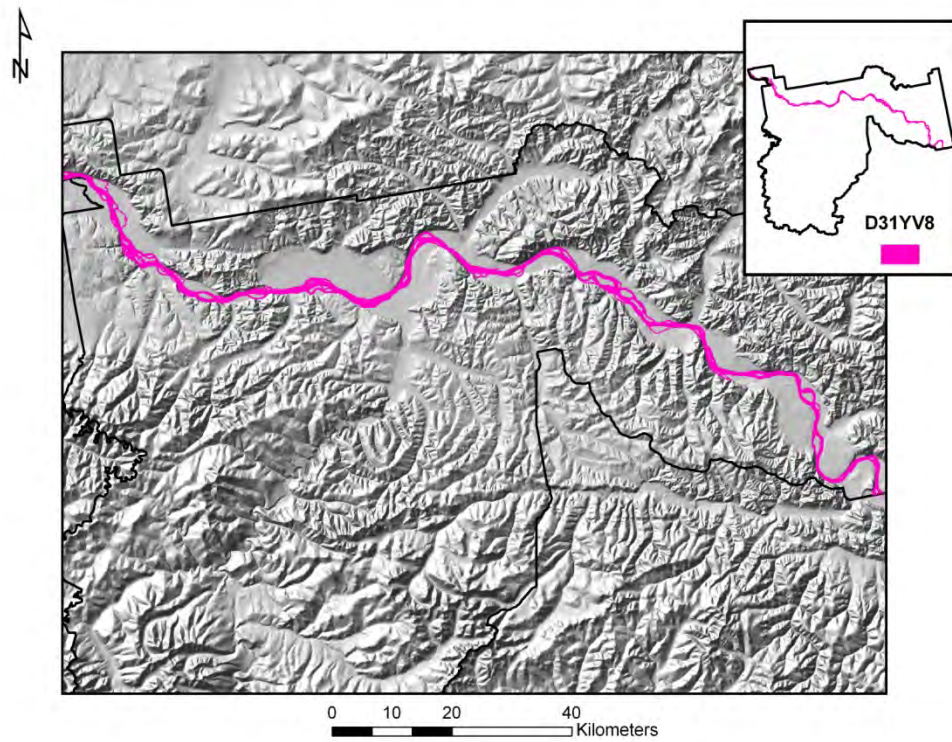
Slope: 0 to 1 percent

Landform: Terraces

Ecological site: Boreal Graminoid Peat Terrace, Depression (R231XY199AK)

Hydric soil status: Hydric

D31YV8—Boreal Low Flood Plains



Major land resource area: 231—Interior Alaska Highlands

Elevation: 100 to 2,000 meters

Mean annual precipitation: 233 to 705 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 50 to 110 days

Map Unit Composition

D31—Boreal water, flowing: 70 percent

Dissimilar minor components: 30 percent

D31—Boreal Water, Flowing

Slope range: 0 to 2 percent

Depth to restrictive feature: None within a depth of 150 centimeters

Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Unspecified

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: Not applicable

Land capability subclass (nonirrigated): 8w

Ecological site: Boreal Water, Non-Vegetated (R231XY194AK)

Hydric soil status: Not rated

Hydrologic soil group: D

Typical profile:

W—0 to 152 centimeters; water

Minor Components

D31—Boreal Scrub Sandy Low Flood Plains

Percentage of map unit: 14 percent

Slope: 0 to 10 percent

Landform: Low flood plains

Ecological site: Boreal Scrub Sandy Floodplain, Low (R231XY198AK)

Hydric soil status: Not hydric

D31—Boreal Riverwash

Percentage of map unit: 10 percent

Slope: 0 to 5 percent

Landform: Very low flood plains

Ecological site: Boreal Gravelly Floodplain, Non-Vegetated (R231XY126AK)

Hydric soil status: Not hydric

D31—Boreal Forest Loamy Mid Flood Plains

Percentage of map unit: 6 percent

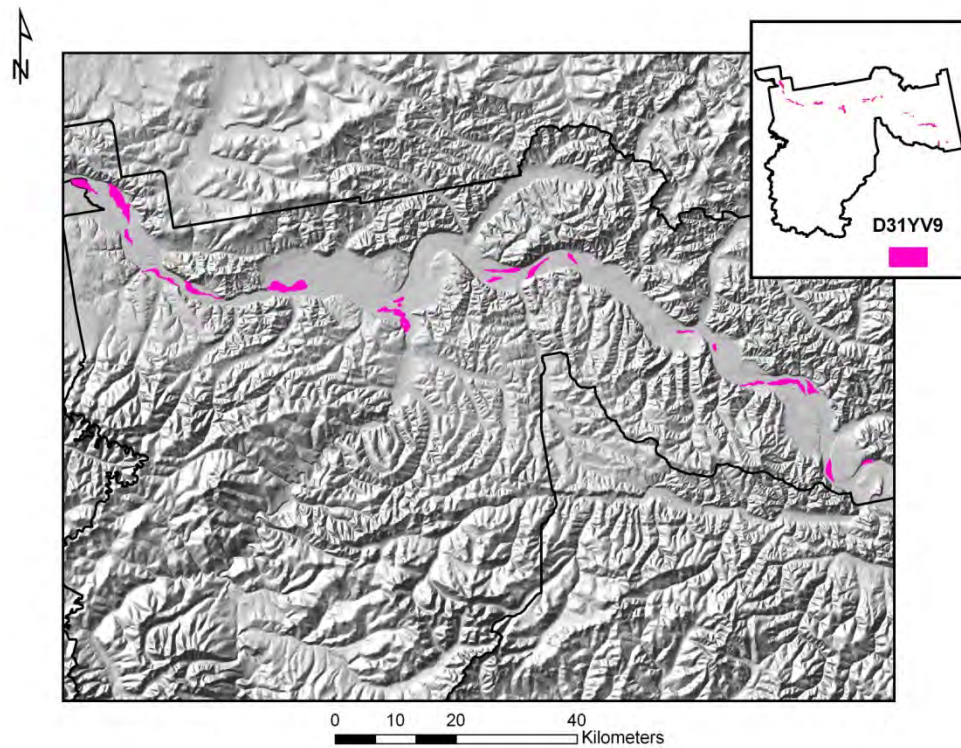
Slope: 1 to 5 percent

Landform: Mid flood plains

Ecological site: *Populus balsamifera* (F231XY189AK)

Hydric soil status: Not hydric

D31YV9—Boreal High Flood Plains



Major land resource area: 231—Interior Alaska Highlands

Elevation: 150 to 650 meters

Mean annual precipitation: 233 to 539 millimeters

Mean annual air temperature: -5 to -2 degrees C

Frost-free period: 50 to 110 days

Map Unit Composition

D31—Boreal taiga loamy high flood plains, frozen: 78 percent

Dissimilar minor components: 22 percent

D31—Boreal Taiga Loamy High Flood Plains, Frozen

Landform: High flood plains

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 10 percent

Parent material: Organic material over loamy alluvium

Depth to restrictive feature: 50 to 120 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Somewhat poorly drained

Flooding frequency: Rare

Ponding frequency: None

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Moderate (about 18.8 centimeters)

Land capability subclass (nonirrigated): 4s

Ecological site: *Picea glauca* (F231XY196AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Fluventic Haplothels

Typical profile:

Oi—0 to 9 centimeters; slightly decomposed plant material

C—9 to 77 centimeters; stratified sandy loam to silt loam

Cf—77 to 152 centimeters; stratified, permanently frozen sandy loam to silt loam

Minor Components

D31—Boreal Scrub Sandy Low Flood Plains

Percentage of map unit: 11 percent

Slope: 0 to 10 percent

Landform: Low flood plains

Ecological site: Boreal Scrub Sandy Floodplain, Low (R231XY198AK)

Hydric soil status: Not hydric

D31—Boreal Scrub Organic Depressions

Percentage of map unit: 7 percent

Slope: 0 to 5 percent

Landform: Terraces

Ecological site: Boreal Scrub Peat Floodplain (R231XY137AK)

Hydric soil status: Hydric

D31—Boreal Scrub Loamy Depressions

Percentage of map unit: 4 percent

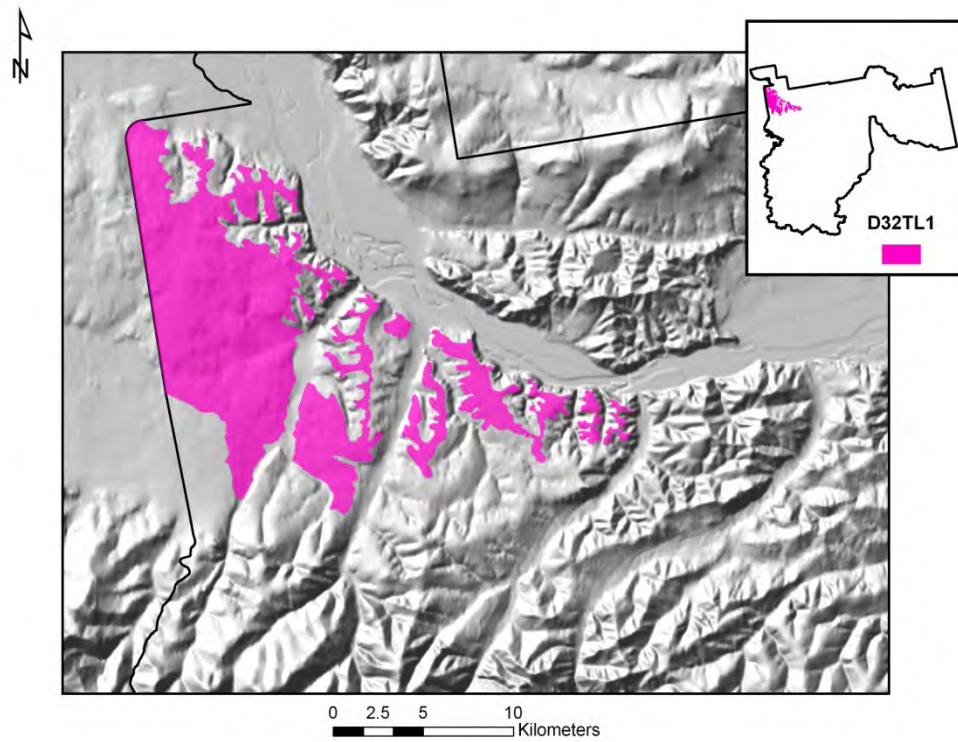
Slope: 0 to 3 percent

Landform: Terraces

Ecological site: Boreal Scrub Loamy Depression (R231XY138AK)

Hydric soil status: Hydric

D32TL1—Boreal Eolian Plains with Common Permafrost



Major land resource area: 232—Yukon Flats Lowlands

Elevation: 200 to 515 meters

Mean annual precipitation: 233 to 344 millimeters

Mean annual air temperature: -5 to -3 degrees C

Frost-free period: 75 to 110 days

Map Unit Composition

D32—Boreal taiga organic plains, frozen: 79 percent

Dissimilar minor components: 21 percent

D32—Boreal Taiga Organic Plains, Frozen

Landform: Loess plains

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 8 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 50 to 100 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 1.5)

Salinity (maximum based on representative value): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 12 centimeters)

Land capability subclass (nonirrigated): 5w

Ecological site: *Picea mariana/Vaccinium uliginosum-Ledum groenlandicum*
(F232XY201AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 41 centimeters; peat

Cgjj—41 to 60 centimeters; silt loam

Cjff—60 to 152 centimeters; permanently frozen silt loam

Minor Components

D32—Boreal Woodland Loamy Drainages, Frozen

Percentage of map unit: 9 percent

Slope: 1 to 5 percent

Landform: Drainageways

Ecological site: *Picea mariana/Salix pulchra-Alnus viridis ssp. fruticosa*
(F232XY203AK)

Hydric soil status: Hydric

D32—Boreal Forest Gravelly Escarpments, Frozen

Percentage of map unit: 8 percent

Slope: 10 to 70 percent

Landform: Escarpments

Ecological site: Picea glauca-Betula papyrifera/Alnus viridis ssp. fruticosa
(F232XY210AK)

Hydric soil status: Not hydric

D32—Boreal Moss Organic Depressions

Percentage of map unit: 4 percent

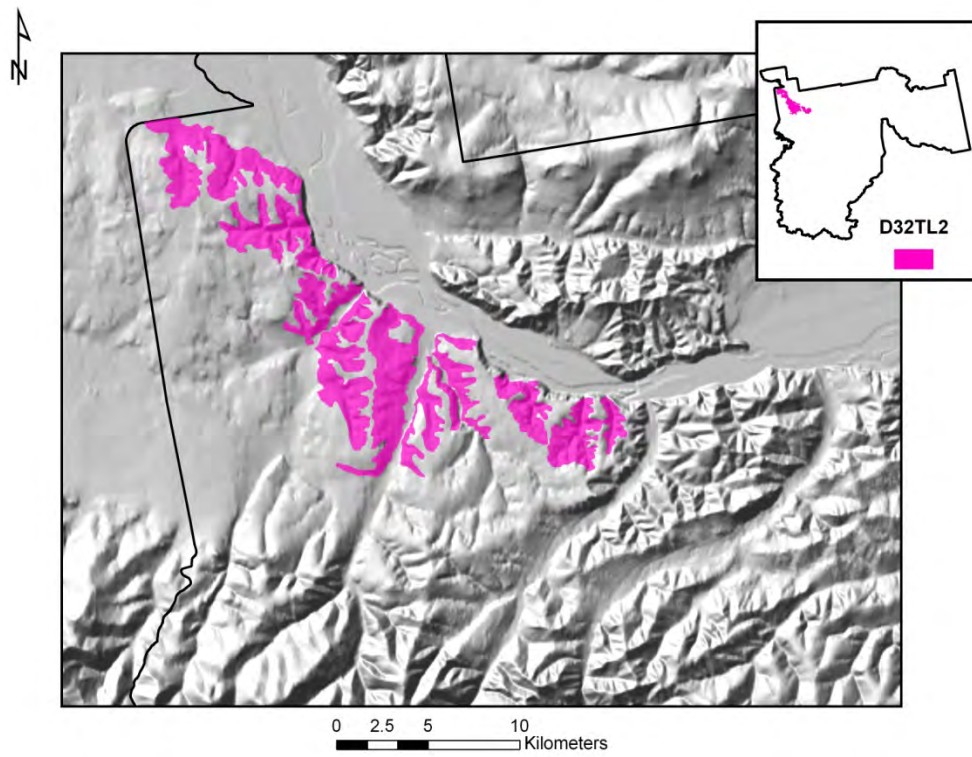
Slope: 0 percent

Landform: Loess plains

Ecological site: Boreal Moss Peat Depression (R232XY220AK)

Hydric soil status: Hydric

D32TL2—Boreal Escarpments with Common Permafrost



Major land resource area: 232—Yukon Flats Lowlands

Elevation: 200 to 515 meters

Mean annual precipitation: 233 to 344 millimeters

Mean annual air temperature: -5 to -3 degrees C

Frost-free period: 75 to 110 days

Map Unit Composition

D32—Boreal forest gravelly escarpments, frozen: 40 percent

D32—Boreal taiga loamy escarpment slopes: 30 percent

D32—Boreal taiga silty eolian slopes, frozen: 20 percent

Dissimilar minor components: 10 percent

D32—Boreal Forest Gravelly Escarpments, Frozen

Landform: Escarpments

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Northeast

Aspect (range): Southwest to south (clockwise)

Slope range: 10 to 70 percent

Parent material: Organic material over gravelly colluvium

Depth to restrictive feature: 45 to 90 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 2)

Salinity (maximum based on representative value): Very slightly saline (about 2 millimhos per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Somewhat poorly drained

Flooding frequency: None

Ponding frequency: None

Depth to seasonal water table: About 2 to 20 centimeters (perched)

Available water capacity (entire profile): Low (about 9.5 centimeters)

Land capability subclass (nonirrigated): 7s

Ecological site: *Picea glauca-Betula papyrifera/Alnus viridis ssp. fruticosa*
(F232XY210AK)

Hydric soil status: Not hydric

Hydrologic soil group: D

Soil classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Folistic
Haplorthels

Typical profile:

Oi—0 to 21 centimeters; slightly decomposed plant material

C—21 to 56 centimeters; gravelly very fine sandy loam

Cf—56 to 152 centimeters; permanently frozen very gravelly fine sandy loam

D32—Boreal Taiga Loamy Escarpment Slopes

Landform: Escarpments

Landform position (two-dimensional): Backslopes

Downslope shape: Linear

Across-slope shape: Linear

Aspect (representative): Southwest

Aspect (range): East to northwest (clockwise)

Slope range: 50 to 70 percent

Parent material: Sandy and gravelly colluvium

Depth to restrictive feature: None within a depth of 150 centimeters
Shrink-swell potential: Low (linear extensibility percentage about 1)
Salinity (maximum based on representative value): Nonsaline (about 1.5 millimhos per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Moderately high
Natural drainage class: Excessively drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: At the soil surface (perched)
Available water capacity (entire profile): Low (about 11.9 centimeters)
Land capability subclass (nonirrigated): 7s
Ecological site: *Picea glauca/Shepherdia canadensis-Rosa acicularis* (F232XY211AK)
Hydric soil status: Not hydric
Hydrologic soil group: B
Soil classification: Sandy or sandy-skeletal, mixed Typic Haplocryepts
Typical profile:
 A—0 to 8 centimeters; loam
 Bs—8 to 28 centimeters; loam
 C—28 to 152 centimeters; very gravelly loamy coarse sand

D32—Boreal Taiga Silty Eolian Slopes, Frozen

Landform: Escarpments
Landform position (two-dimensional): Backslopes
Downslope shape: Linear
Across-slope shape: Concave
Aspect (representative): Southeast
Aspect (range): Northeast to west (clockwise)
Slope range: 10 to 20 percent
Parent material: Organic material over loamy colluvium
Depth to restrictive feature: 50 to 120 centimeters to permafrost
Shrink-swell potential: Low (linear extensibility percentage about 1.5)
Salinity (maximum based on representative value): Nonsaline (about 1 millimho per centimeter)
Sodicity (maximum): Not sodic
Calcium carbonate equivalent: No carbonates
Slowest capacity to transmit water (Ksat): Very low
Natural drainage class: Somewhat poorly drained
Flooding frequency: None
Ponding frequency: None
Depth to seasonal water table: About 2 to 20 centimeters (perched)
Available water capacity (entire profile): Low (about 12.8 centimeters)
Land capability subclass (nonirrigated): 4s
Ecological site: *Picea mariana/Alnus viridis ssp. fruticosa-Ledum groenlandicum* (F232XY227AK)
Hydric soil status: Not hydric
Hydrologic soil group: C
Soil classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Typic Haplorthels
Typical profile:
 Oi—0 to 11 centimeters; slightly decomposed plant material
 C—11 to 70 centimeters; silt loam
 Cf—70 to 152 centimeters; permanently frozen silt loam

Minor Components

D32—Boreal Taiga Organic Plains, Frozen

Percentage of map unit: 7 percent

Slope: 0 to 8 percent

Landform: Loess plains

Ecological site: *Picea mariana/Vaccinium uliginosum-Ledum groenlandicum*
(F232XY201AK)

Hydric soil status: Hydric

D32—Boreal Woodland Loamy Drainages, Frozen

Percentage of map unit: 3 percent

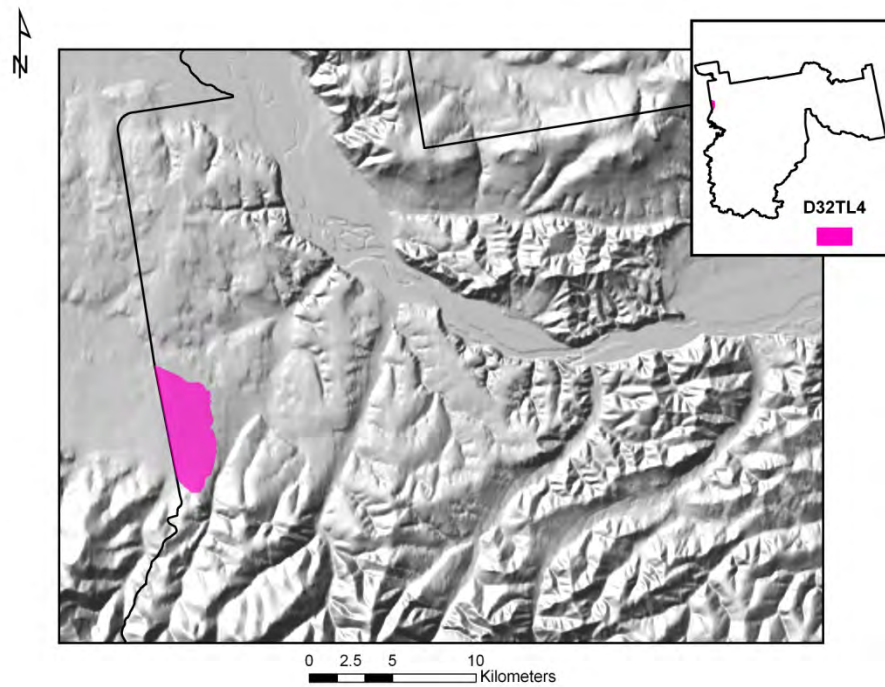
Slope: 1 to 5 percent

Landform: Drainageways

Ecological site: *Picea mariana/Salix pulchra-Alnus viridis ssp. fruticosa*
(F232XY203AK)

Hydric soil status: Hydric

D32TL4—Boreal Eolian Plains with Extensive Permafrost



Major land resource area: 232—Yukon Flats Lowlands

Elevation: 315 to 515 meters

Mean annual precipitation: 233 to 344 millimeters

Mean annual air temperature: -5 to -3 degrees C

Frost-free period: 75 to 110 days

Map Unit Composition

D32—Boreal taiga organic plains, frozen: 83 percent

Dissimilar minor components: 17 percent

D32—Boreal Taiga Organic Plains, Frozen

Landform: Loess plains

Downslope shape: Linear

Across-slope shape: Linear

Slope range: 0 to 8 percent

Parent material: Organic material over silty cryoturbate

Depth to restrictive feature: 50 to 100 centimeters to permafrost

Shrink-swell potential: Low (linear extensibility percentage about 1.5)

Salinity (maximum based on representative value): Nonsaline (about 1 millimho per centimeter)

Sodicity (maximum): Not sodic

Calcium carbonate equivalent: No carbonates

Slowest capacity to transmit water (Ksat): Very low

Natural drainage class: Very poorly drained

Flooding frequency: None

Ponding frequency: Frequent

Depth to seasonal water table: At the soil surface (perched)

Available water capacity (entire profile): Low (about 12 centimeters)

Land capability subclass (nonirrigated): 5w

Ecological site: *Picea mariana/Vaccinium uliginosum-Ledum groenlandicum*
(F232XY201AK)

Hydric soil status: Hydric

Hydrologic soil group: D

Soil classification: Loamy, mixed, euic, subgelic Terric Fibristels

Typical profile:

Oi—0 to 41 centimeters; peat

Cgjj—41 to 60 centimeters; silt loam

Cjff—60 to 152 centimeters; permanently frozen silt loam

Minor Components

D32—Boreal Woodland Loamy Drainages, Frozen

Percentage of map unit: 10 percent

Slope: 1 to 5 percent

Landform: Drainageways

Ecological site: *Picea mariana/Salix pulchra-Alnus viridis ssp. fruticosa*
(F232XY203AK)

Hydric soil status: Hydric

D32—Boreal Moss Organic Depressions

Percentage of map unit: 7 percent

Slope: 0 percent

Landform: Loess plains

Ecological site: Boreal Moss Peat Depression (R232XY220AK)

Hydric soil status: Hydric

Ecological Sites

An ecological site is a basic unit of ecological land classification. It represents a type of land with a distinctive combination of potential natural plant communities, soils, landforms, hydrology, climate, and ecological properties and processes. Examples of ecological properties and processes include vegetation succession, nutrient cycling, and productivity. Ecological site classification is not oriented to any type of land or land use and is applicable to forestland, rangeland, wetland, and upland. The relationship among climate, landforms, soils, and vegetation and the differences in the cumulative effect of these factors from one site to another are the bases for ecological site classification. The ecological sites of the survey area are listed in [table 5](#).

The primary emphasis of ecological site classification generally is the vegetation. The plants observed in the survey area are listed in [table 6](#). Vegetation is considered to be an indicator of the integrated factors of the environment. Productivity, the response of the vegetation to various types of disturbances, and the use and management of the vegetation are principal concerns for landowners and managers.

A secondary, but equally important, emphasis of site classification is the relationship between landforms and soils, which generally is fairly predictable. Natural disturbances, such as wildfire, wind, and flooding, result in considerable variations in the vegetation. Landform-soil relationships provide a stable resource base by which ecological sites can be determined, regardless of the existing vegetative conditions. In addition, inferences can be made regarding site dynamics and stability, soil processes, and appropriate management systems based on landforms and soil types.

Abrupt, or distinct, breaks between landforms, soils, and vegetation occasionally occur, but more commonly the transition is gradual and indistinct. Precipitation, temperature, and other climatic patterns as well as microclimatic variables, such as elevation, change gradually across the landscape. Ecological site classifications, therefore, should be viewed as landscape models. The boundaries between ecological sites commonly are arbitrary and approximate. The characteristics and properties in and between ecological sites are complex and variable, and they commonly overlap to some degree.

Ecological site classification provides a useful framework for correlating and compiling data and interpretations on multiple resources and landscape processes. It is also a valuable framework for organizing, applying, and monitoring resource conservation systems for various land uses.

Potential Natural Community

By definition, an ecological site is characterized by a single potential natural community (PNC). The PNC is the assemblage of plant species that most nearly achieves a long-term steady state of productivity, structure, and composition on a site (Tueller, 1973; National Research Council, 1994). The occurrence of a single potential plant community is based on the premise that over time and in the absence of disturbances to the vegetation and changes in the site, the succession (or the gradual and successive replacement of one plant community by another) eventually results in a single plant community that best reflects the integrated factors of the environment. The theoretic validity and practicality of this theory has been questioned (National Research Council, 1994); however, the PNC provides a benchmark for predicting long-term and short-term responses of the vegetation to disturbances and pathways and to which the processes of succession can be related.

Site Progression

Site progression refers to the gradual and progressive changes over time to the physical and environmental conditions of a site that result in a different PNC. In riparian areas and areas of permafrost, there is a high potential for progressive changes as a result of geomorphic and soil-forming processes and climatic influences and potentials. Vegetation succession on sites undergoing gradual site progression generally does not lead to a true PNC. Changes in the site are occurring as succession is taking place, so a long-term, steady state of productivity, structure, and composition is never achieved.

Along rivers, low flood plains are gradually elevated to the height of stream terraces in response to flooding, channel migration and downcutting, and deposition of alluvium by flood water. As the height of the land surface above the channel increases, the frequency and duration of flooding decrease and the depth to the water table increases. These site changes commonly occur gradually over the lifecycle of the valley formation.

Primary vegetation succession can occur concurrently with the site progression of flood plains and stream terraces. In Alaska, the sequence typically transitions from low-stature herb and shrub communities on recently exposed alluvium to tall forest communities on stream terraces. The latest successional stage attainable on a specific hydrologically influenced surface is referred to as a riparian association (Hansen, 1989; Gebhardt and others, 1990). The PNC of ecological sites in riparian zones commonly is a riparian association.

In areas of permafrost, the post-fire vegetation succession on most boreal forest sites is accompanied by a gradual increase in the abundance and thickness of the organic layer of moss on the soil surface. As the insulating capacity of the organic layer increases, soil warming in summer is reduced and the overall soil temperature decreases. Eventually, the permafrost forms or rises in the soil profile and soil drainage is restricted, commonly to the degree that a shallow water table is perched on the surface of the permafrost. The changes in the soil environment result in a marked decrease in the cycling and availability of nutrients and the productivity of the site. Productive hardwood and spruce forests gradually are replaced by unproductive mixed spruce woodland and scrub bogs.

The time frame and transition dynamics for site progression from a relatively warm, well drained, permafrost-free condition to a cold, poorly drained, shallow to permafrost condition are not well understood. For purposes of site classification, a reasonable hypothesis is that the duration of the well drained, permafrost-free, productive condition persists for at least the lifecycle of the initial stand of spruce. Separate ecological sites are described for the productive, well drained, permafrost-free sites and for the poorly drained, shallow to permafrost sites. The PNC is then defined as the latest successional stage observed on the site. On the permafrost-free sites, the PNC commonly is not a long-term, steady state of productivity, structure, and composition.

Site Retrogression

Wildfire and flooding are common recurring disturbances in interior Alaska. The absence of dwarf spruce forest and limited occurrence of charcoal in the soils, however, suggests that the influence of fire is relatively minor. Flooding, a common recurring disturbance on flood plains, can interrupt or retard site progression. Depending on the velocity and duration of a flood event, vegetation can be destroyed by physical abrasion of sediment, prolonged saturation, or burial. Depending on the intensity and duration, significant site retrogression can occur quickly from a single flood episode. The degree of site alteration is influenced by the height of the site above active channels and its position and orientation to the channel.

The occurrence of site retrogression depends on the site factors and the intensity and duration of the flooding event. Higher flood plains are subject to less frequent flood events and support more mature plant communities, such as forest types, that

are less sensitive to brief periods of flooding. Well established vegetation reduces the velocity of the flood and results in more deposition of sediment. Flooding occurs more frequently on lower flood plains that support young, commonly herbaceous and scrub communities that are relatively rapid growing and can quickly colonize a site following significant flooding. The soils commonly are gravelly because of the deeper, high gradient floodwater and the presence of a regime that includes removal of sandy and silty sediment from the surface.

Flood plains consist of a number of terraces that have a successively lower frequency of flooding as the elevation above active channels increases. The vegetation on each flood plain level reflects the dominant flood regime. Vegetation, site, and soil properties associated with each flooding regime are expressed by a single PNC. In addition to identifying the latest successional stage as the PNC, ecological site classification provides a framework for recognizing and describing progression-retrogression dynamics and relationships.

Soil-Site Correlation

An ecological site consists of one or more soils that have similar vegetative and ecological potentials and processes. A number of different soils might be grouped together in an ecological site, but an individual soil can be included in only one site. To establish soil-site relationships and maintain the one-to-one correlation, vegetative characteristics, ecological patterns and processes, soil characteristics, and other criteria specified in *Soil Taxonomy* (Soil Survey Staff, 1999) and *Keys to Soil Taxonomy* (Soil Survey Staff; 2010) are used to develop the soil classification.

Because of the one-to-one correlation between a soil and an ecological site, the ecological site can be determined by understanding the soil. This is particularly useful in areas where the vegetation is not a definitive indicator of the site. For example, the vegetation has been altered by disturbance or management or the vegetation on two sites is similar in composition and structure. Because of this correlation, an ecological site map can be derived from the soil map. The ecological sites as correlated to the soil components in the survey area are given in [table 5](#).

Ecological Site Characterization Reports

The ecological site characterization reports for the soils in the survey area are provided in this section.

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca*-*Populus tremuloides*/*Shepherdia canadensis*-*Rosa acicularis*/*Mertensia paniculata*-*Geocaulon lividum*

Ecological Classification ID: F231XY110AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Drainageways on escarpments, escarpments, hills, mountains

Slope (percent): Min Max

40 85

Elevation (feet): Min Max

850 2,963

Range of Aspect Direction: Northeast to southwest (clockwise), northeast to west (clockwise)

Water Table Depth (cm): None recorded

Flooding: Frequency Duration

None None

Ponding: Frequency Duration

None None

Runoff: High

Frost-Free Days: Min Max

20 110

Mean Annual Precipitation (inches): Low High

10 25

Mean Annual Air Temperature (°F): Low High

23 28

Monthly Data:

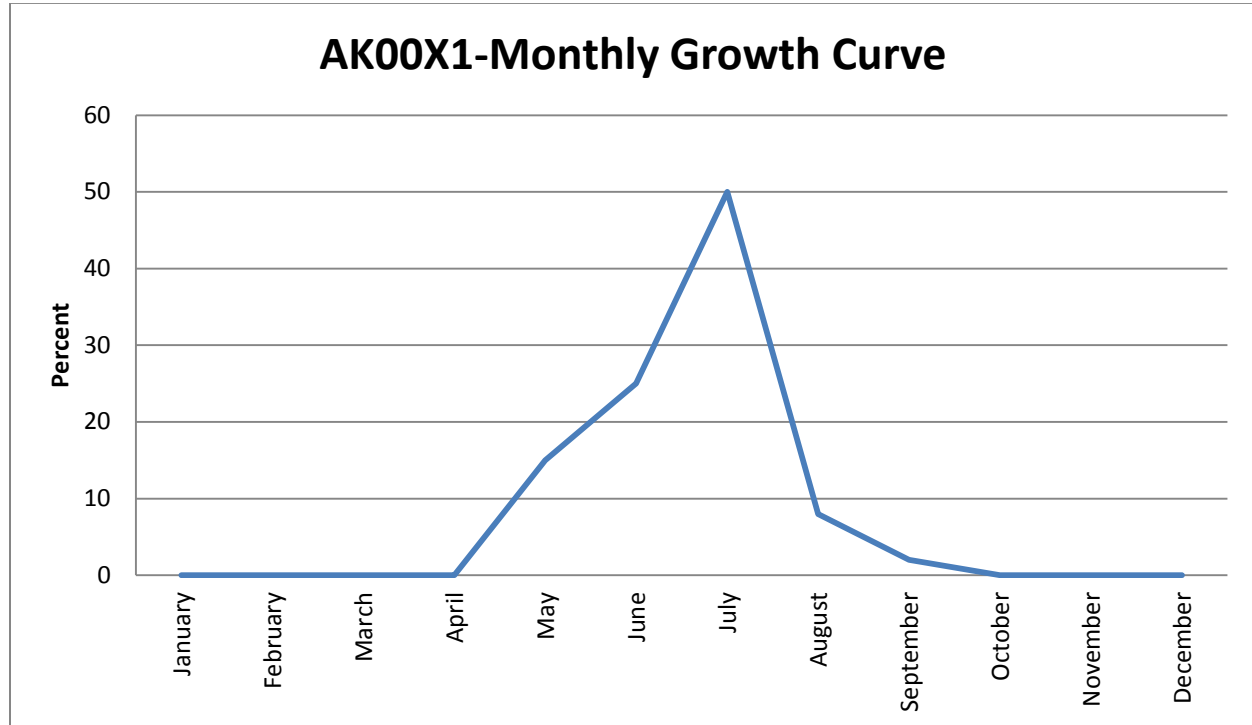
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH1—D31-Boreal forest rocky sedimentary colluvial slopes
 D31BH2—D31-Boreal forest rocky colluvial escarpments
 D31BH2—D31-Boreal forest rocky sedimentary colluvial slopes
 D31BH7—D31-Boreal forest rocky sedimentary colluvial slopes
 D31LB1—D31-Boreal forest rocky sedimentary colluvial slopes
 D31LB2—D31-Boreal forest rocky sedimentary colluvial slopes
 D31OF1—D31-Boreal forest rocky sedimentary colluvial slopes

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts; loamy-skeletal, mixed, superactive Ustic Haplocrypts

Dominant Parent Material: Organic material over gravelly colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 5 10.5 18

pH: Low RV High

3.4 6.7 9

Effective CEC (me/100g): Low High

14.2 40

CEC (me/100g): Min RV Max

4 19.3 62

Organic Matter (percent): Low RV High

2 22.5 80

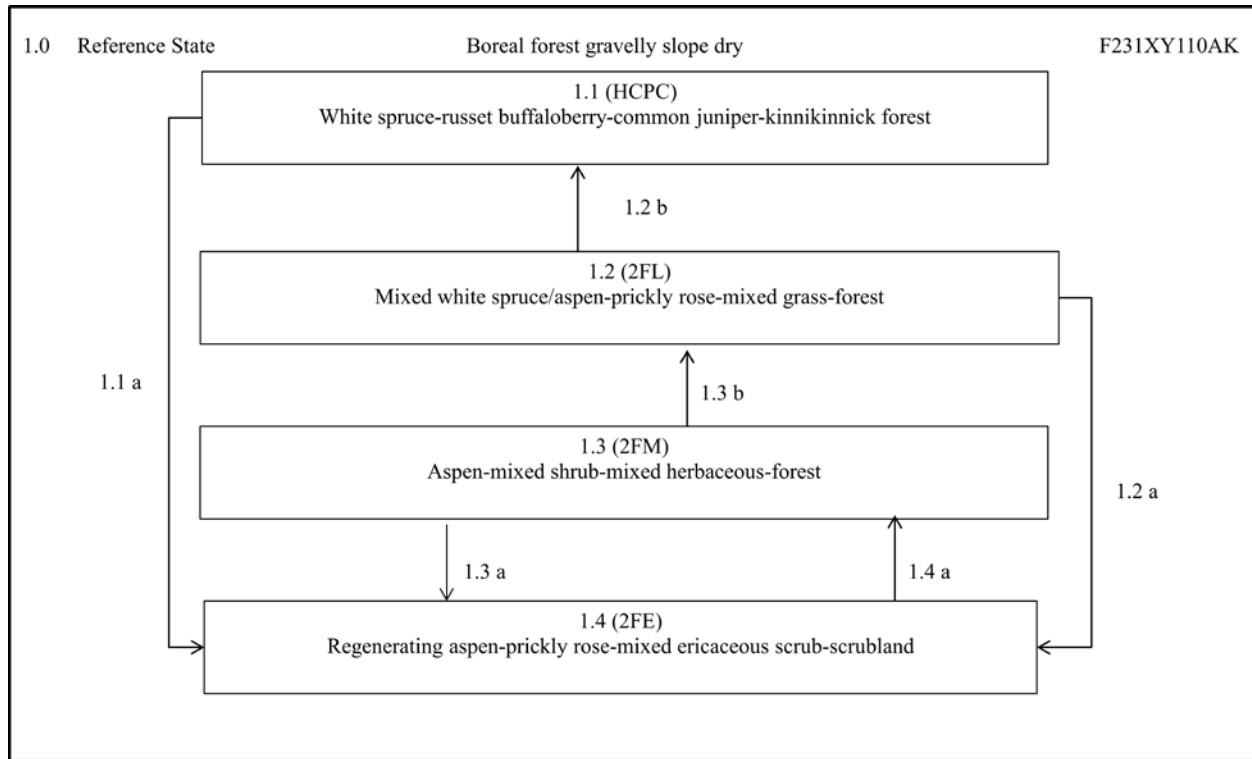
Bulk Density (1/3-Bar): Min RV Max

0.2 0.9 1.28

Plant Community Phases

| | |
|---|-------------|
| Ecological Site Description ID: | F231XY110AK |
| Ecological Dynamics of the Site: | |
| <p>This boreal ecological site is on steep, south-facing escarpment slopes (slopes average 65 percent). The soils have mixed lithology, are well drained, and are considered more stable than those of ecological site R231XY109AK. Ecological site F231XY181AK is similar, but site F231XY110AK does not have a thick organic mat or abundant moss ground cover. These differences are attributed to the warmer, drier landscape position. The soils in community phase 1.1 are classified as Haplocrypts and are composed of organic matter over gravelly colluvium.</p> <p>Fire resulted in four documented phases. It is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is about 100 years.</p> | |

State and Transition Diagram:



State and Transition Diagram:

1

State Name:

Reference


State Narrative:

Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event.


Because of the steepness of slope and dominance of white spruce forest, a high-severity fire regime is considered to be typical for this ecological site. During a high-severity fire, a large proportion of the organic mat is consumed and mineral soil material typically is exposed. While many pre-fire species likely will regenerate after a fire, conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).

The fire return interval has a major effect on the structure of the forest. Longer fire return intervals favor development of community phase 1.1, and shorter fire return intervals favor development of community phases 1.2 and 1.3.


The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.

| | | | |
|---|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-russet buffaloberry-common juniper-kinnikinnick forest |
| Community Phase Narrative: | | | |
| <p>The dominant vegetation is a mixture of tall and medium <i>Picea glauca</i>, a mixture of shrubs, and a mixture of forbs. <i>Picea glauca</i> is the most common tree species (~55% cover) in the stands, and <i>Populus tremuloides</i> is a minor component. The shrubs consist of a similar abundance of tall, medium, short, and dwarf strata (combined ~40% cover). The most common tall shrub is <i>Salix sp.</i>, the most common medium shrub is <i>Shepherdia canadensis</i>, the most common low shrub is <i>Juniperus communis</i>, and the most common dwarf shrub is <i>Arctostaphylos uva-ursi</i>. Common forbs include <i>Geocaulon lividum</i>, <i>Equisetum scirpoides</i>, and <i>Mertensia paniculata</i>. Graminoids and lichen typically are minor components. Feathermoss is an abundant ground cover in some areas. One observation of this phase was conducted.</p> | | | |


| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Fire. From field observations, the communities resemble those associated with high-intensity fires. White spruce is the dominant tree species. This phase likely has the longest fire return interval. |

| | | | |
|---|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Mixed white spruce/aspen-prickly rose-mixed grass-forest |
| Community Phase Narrative: | | | |
| <p>The dominant vegetation is a mixture of tall and medium trees. <i>Populus tremuloides</i> and <i>Picea glauca</i> are the dominant tree species (combined ~35% cover), and <i>Betula neoalaskana</i> is a minor component. The shrubs (combined ~40% cover) primarily are in the low shrub stratum, and the most common species is <i>Rosa acicularis</i>. Graminoids and forbs are abundant (combined ~30% cover). Common graminoids are <i>Calamagrostis canadensis</i> and <i>Calamagrostis purpurascens</i>. The diversity of the forbs is high, but none of the species is abundant. Feathermoss is a common ground cover. Seven observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|---|
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. |
| 1.2b | Normal time and growth without fire. Aspen eventually is replaced by white spruce, resulting in community phase 1.1. Aspen commonly occurs as standing dead trees, which is presumed to indicate that the community is transitioning into a phase that is dominantly white spruce. Phase 1.2 is thought to have a shorter fire return interval than phase 1.1 and a longer fire return interval than phase 1.3. |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Aspen-mixed shrub-mixed herbaceous-forest |

| Community Phase Narrative: | |
|---|---|
| <p>The dominant vegetation is a mixture of tall, medium, and regenerating <i>Populus tremuloides</i> (totaling ~40% cover). <i>Picea glauca</i> and <i>Betula neoalaskana</i> are also present but are not considered dominant components in the stands. Medium, low, and dwarf shrubs are abundant (totaling ~40% cover). Common medium and low shrubs are <i>Rosa acicularis</i> and <i>Shepherdia canadensis</i>, and common dwarf shrubs are <i>Arctostaphylos uva-ursi</i> and <i>Vaccinium vitis-idaea</i>. Graminoids and forbs are evenly distributed (totaling ~35% cover). A common graminoid is <i>Calamagrostis canadensis</i>, and a common forb is <i>Chamerion angustifolium</i>. Moss and lichen cover is minimal. Ten observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Fire. Aspen stands are less likely to burn and fire is less likely to spread on these stands than on stands that are dominantly spruce. Burned stands of paper birch and/or aspen are in the study area. If community phase 1.3 is burned, the resulting community resembles community phase 1.4. |
| 1.3b | Normal time and growth without fire. White spruce becomes codominant with aspen, resulting in a community resembling that of phase 1.2. Phase 1.3 is thought to have a shorter fire return interval than phase 1.2 and a longer fire return interval than phase 1.4. |

| | | | |
|--|---|-----------------------|--|
| Phase 1.4 |  | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Regenerating aspen-prickly rose-mixed ericaceous scrub-scrubland |
| Community Phase Narrative: | | | |
| <p>The dominant vegetation is regenerating <i>Populus tremuloides</i> (totaling ~35% cover), but <i>Picea glauca</i> and <i>Betula neoalaskana</i> are also present. The majority of the shrub cover is in the low and dwarf strata (totaling ~40% cover). Common species include <i>Rosa acicularis</i>, <i>Arctostaphylos uva-ursi</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids and forbs make up ~30% of the cover. This community phase is highly diverse, but no graminoid or forb species are dominant. Lichen and moss cover is evenly distributed and covers ~30% of the ground surface. Eight observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|---|
| Pathway Number: | Pathway Name & Description: |
| 1.4a | Normal time and growth without fire. The aspen on the sampled sites is expected to mature, and the community is expected to resemble phase 1.3. If this phase burns, the resulting community would likely resemble that of phase 1.4. |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
61 82.8 105

Restrictive Features: None recorded

Drainage Class: Excessively drained, somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
0 2.5 8

Texture: Channery silt loam, gravelly sandy loam, sandy loam, silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.12 0.21 0.35

pH: Min RV Max
3.7 6.1 8.1

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Subsurface Layer

Thickness (cm): Min RV Max
61 80.2 97

Texture: Very gravelly sandy loam, channers, channery silt loam, silt loam, extremely channery silt loam, extremely channery sandy loam, sandy loam

AWC (cm/cm): Min RV Max
0.07 0.16 0.25

pH: Min RV Max
5 6.7 8.2

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 0-40 | 5-30 | 10-60 | 2-20 | 0-10 | 1-25 | 0-5 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 5-5 | --- | --- | --- |
| GT (>24 inches) | 5-5 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-0.01 | --- | --- |
| FM (4-24 inches) | --- | 1-8 | --- | --- |
| SD (<8 inches) | --- | --- | 10-10 | --- |
| SL (8-36 inches) | --- | --- | 1-7 | --- |
| TR (<15 feet) | --- | --- | --- | 1-65 |
| TM (15-40 feet) | --- | --- | --- | 2-3 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|------------------------------|------------------|-------------------------|
| CAPU | <i>Calamagrostis purpurascens</i> | 15-15-15 | 13 | 13.7 |
| POA | <i>Poa</i> | 15-15-15 | 13 | 13.7 |
| FEAL | <i>Festuca altaica</i> | 10-10-10 | 13 | 11.2 |
| POGL | <i>Poa glauca</i> | 5-5-5 | 25 | 11.2 |
| FESTU | <i>Festuca</i> | 7-7-7 | 13 | 9.4 |
| CALAM | <i>Calamagrostis</i> | 7-7-7 | 13 | 9.4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| CAPU | <i>Calamagrostis purpurascens</i> | 5-18.3-25 | 38 | 26.2 |
| AGROP2 | <i>Agropyron</i> | 15-15-15 | 13 | 13.7 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| SATR5 | <i>Saxifraga tricuspidata</i> | 0.1-4.4-8 | 38 | 12.8 |
| CHAN9 | <i>Chamerion angustifolium</i> | 0.1-3-10 | 50 | 12.3 |
| GABO2 | <i>Galium boreale</i> | 0.1-2.2-5 | 63 | 11.8 |
| ACMI2 | <i>Achillea millefolium</i> | 5-5-5 | 25 | 11.2 |
| SOMU | <i>Solidago multiradiata</i> | 0-1.8-5 | 63 | 10.7 |
| ZIEL2 | <i>Zigadenus elegans</i> | 3-4-5 | 25 | 10.0 |
| SILEN | <i>Silene</i> | 3-4-5 | 25 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| ARUV | <i>Arctostaphylos uva-ursi</i> | 5-30-70 | 38 | 33.5 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-25-60 | 38 | 30.6 |
| EMNI | <i>Empetrum nigrum</i> | 20-20-20 | 13 | 15.8 |
| ARFR4 | <i>Artemisia frigida</i> | 20-20-20 | 13 | 15.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 1-12.2-40 | 63 | 27.6 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-4.5-7 | 25 | 10.6 |
| ARUV | <i>Arctostaphylos uva-ursi</i> | 7-7-7 | 13 | 9.4 |
| SHCA | <i>Shepherdia canadensis</i> | 2-3.5-5 | 25 | 9.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 10-38.3-70 | 88 | 57.9 |
| PIGL | <i>Picea glauca</i> | 1-3-9 | 75 | 15.0 |
| BENE4 | <i>Betula neoalaskana</i> | 1-5.5-10 | 25 | 11.7 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 70-70-70 | 13 | 29.6 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 3-4-5 | 50 | 14.1 |
| PIGL | <i>Picea glauca</i> | 2-3.7-5 | 38 | 11.7 |

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Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|---------------------------|
| <i>Picea glauca</i> | 46-58-70 | 3-5-7 | 12-18-23 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 2-5-8 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—8; plant species per stop (min-avg-max)—11-18.5-24

Community Phase 2FM



Rooting Depth (cm): Min RV Max
44 68.4 105

Restrictive Features: None recorded

Drainage Class: Excessively drained, somewhat excessively drained

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Surface Layer

Thickness (cm): Min RV Max
0 4.2 12

Texture: Silt loam, slightly decomposed plant material, very flaggy slightly decomposed organic matter, very stony slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.18 0.3 0.35

pH: Min RV Max
4.7 6.5 7.6

Subsurface Layer

Thickness (cm): Min RV Max
4 64.2 93

Texture: Gravelly coarse sandy loam, gravelly silt loam, very gravelly coarse sandy loam, very gravelly sandy loam, extremely gravelly coarse sandy loam, channery silt loam, extremely gravelly sandy loam, loam, extremely channery loam, extremely channery silt loam, very flaggy coarse sandy loam, gravel

AWC (cm/cm): Min RV Max
0.05 0.14 0.24

pH: Min RV Max
4.9 6.2 7.9

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 0-60 | 2-45 | 25-85 | 1-15 | 0-5 | 0-50 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-1 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 0.1- 0.1 | --- | --- |
| FT (>24 inches) | --- | 15-15 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-0.1 | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| SM (3-10 feet) | --- | --- | 0.1-15 | --- |
| TS (<15 feet) | --- | --- | --- | 2-40 |
| TM (15-40 feet) | --- | --- | --- | 4-4 |
| TT (>40 feet) | --- | --- | --- | 2-2 |

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Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 1-12.4-35 | 50 | 24.9 |
| POGL | <i>Poa glauca</i> | 5-5-5 | 20 | 10.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 6-17-35 | 30 | 22.6 |
| CAPU | <i>Calamagrostis purpurascens</i> | 10-12.5-15 | 20 | 15.8 |
| LUARU | <i>Luzula arcuata</i> ssp. <i>unalaschcensis</i> | 10-10-10 | 10 | 10.0 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 1-4-8 | 30 | 11.0 |
| EQSC | <i>Equisetum scirpoides</i> | 2-6-10 | 20 | 11.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| GABO2 | <i>Galium boreale</i> | 0.1-5.2-15 | 70 | 19.0 |
| SATR5 | <i>Saxifraga tricuspidata</i> | 2-7.2-15 | 40 | 17.0 |
| CHAN9 | <i>Chamerion angustifolium</i> | 0.1-4-10 | 50 | 14.2 |
| PEDIC | <i>Pedicularis</i> | 20-20-20 | 10 | 14.1 |
| MEPA | <i>Mertensia paniculata</i> | 0.1-3.8-10 | 50 | 13.8 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| COSE5 | <i>Corydalis sempervirens</i> | 15-15-15 | 10 | 12.2 |
| CHAN9 | <i>Chamerion angustifolium</i> | 5-6-7 | 20 | 11.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| ARUV | <i>Arctostaphylos uva-ursi</i> | 2-29.2-75 | 40 | 34.2 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 6-10-20 | 50 | 22.4 |
| LIBO3 | <i>Linnaea borealis</i> | 0-6.7-10 | 30 | 14.1 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 15-15-15 | 10 | 12.2 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 1-5.4-15 | 70 | 19.5 |
| SHCA | <i>Shepherdia canadensis</i> | 5-10-15 | 20 | 14.1 |
| ARUV | <i>Arctostaphylos uva-ursi</i> | 20-20-20 | 10 | 14.1 |
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 10-10-10 | 10 | 10.0 |
| VIED | <i>Viburnum edule</i> | 10-10-10 | 10 | 10.0 |

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Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 5-13.3-30 | 30 | 20.0 |
| SHCA | <i>Shepherdia canadensis</i> | 1-8-15 | 30 | 15.5 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 2-24.1-60 | 90 | 46.6 |
| PIGL | <i>Picea glauca</i> | 2-5.6-15 | 90 | 22.4 |

Stratum —TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 40-40-40 | 10 | 20.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 3-17.9-40 | 80 | 37.8 |
| BENE4 | <i>Betula neoalaskana</i> | 1-8.5-20 | 40 | 18.4 |
| PIGL | <i>Picea glauca</i> | 1-4.3-10 | 70 | 17.3 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 5-10.7-20 | 30 | 17.9 |
| PIGL | <i>Picea glauca</i> | 2-4.7-8 | 30 | 11.8 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|-------------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 3.1-4-4.5 | 23-24-25 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 25-78.4-110 | 5 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-------------------------------|--------------------------|---------------------------|------------------------------|
| No observed use Slight use | Tree regeneration | Moose | Not grazed/browsed Summer |

Notable Plants: *Draba densifolia*

Species Richness: Number of stops—10; plant species per stop (min-avg-max): 16-24.1-33

Community Phase 2FL



Rooting Depth (cm): Min RV Max
 34 58 84

Restrictive Features: None recorded

Drainage Class: Excessively drained, somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
 0 6 16

Texture: Gravelly very fine sandy loam, peat, silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.2 0.31 0.35

pH: Min RV Max
 5.2 6.1 7.2

Subsurface Layer

Thickness (cm): Min RV Max
 34 52 68

Texture: Gravelly silt loam, extremely cobbly silt loam, extremely gravelly coarse sandy loam, channery silt loam, very channery fine sandy loam, silt loam, extremely channery coarse sandy loam, gravel, very fine sandy loam

AWC (cm/cm): Min RV Max
 0.02 0.14 0.24

pH: Min RV Max
 4 6.2 7.7

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-7 | 5-30 | 40-90 | 2-20 | 0-5 | 0-5 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 15-5 | --- | --- | --- |
| FD (<4 inches) | --- | 18-18 | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| FT (>24 inches) | --- | 0.01-0.01 | --- | --- |
| SL (8-36 inches) | --- | --- | 2-5 | --- |
| SM (3-10 feet) | --- | --- | 1-1 | --- |
| TR (<15 feet) | --- | --- | --- | 1-20 |
| TM (15-40 feet) | --- | --- | --- | 1-5 |
| TT (>40 feet) | --- | --- | --- | 10-2 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-10-15 | 29 | 16.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-21.7-25 | 43 | 30.5 |
| CAPU | <i>Calamagrostis purpurascens</i> | 25-27.5-30 | 29 | 28.0 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| STELL | <i>Stellaria</i> | 18-18-18 | 14 | 16.0 |
| GELI2 | <i>Geocaulon lividum</i> | 10-10-10 | 14 | 12.0 |
| LYCO3 | <i>Lycopodium complanatum</i> | 4-4.5-5 | 29 | 11.3 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 1-3.2-7 | 71 | 15.1 |
| GELI2 | <i>Geocaulon lividum</i> | 1-4.3-10 | 43 | 13.6 |
| GABO2 | <i>Galium boreale</i> | 1-3-5 | 43 | 11.3 |
| CHAN9 | <i>Chamerion angustifolium</i> | 0.1-1.8-3 | 57 | 10.1 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 2-3.5-5 | 29 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| ARUV | <i>Arctostaphylos uva-ursi</i> | 3-5.2-10 | 57 | 17.3 |
| LIBO3 | <i>Linnaea borealis</i> | 1-2.2-5 | 57 | 11.3 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-4.5-7 | 29 | 11.3 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 15-38.8-100 | 57 | 47.1 |
| VIDE | <i>Viburnum edule</i> | 2-10.7-25 | 43 | 21.4 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 10-15-20 | 29 | 20.7 |
| SHCA | <i>Shepherdia canadensis</i> | 5-12.5-20 | 29 | 18.9 |
| JUCO6 | <i>Juniperus communis</i> | 5-6-7 | 29 | 13.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 4-4.7-5 | 43 | 14.1 |
| SABE2 | <i>Salix bebbiana</i> | 1-4-7 | 29 | 10.7 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-10-10 | 14 | 12.0 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 10-10-10 | 14 | 12.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 2-6.7-10 | 100 | 25.9 |
| POTR5 | <i>Populus tremuloides</i> | 1-9.2-20 | 71 | 25.6 |
| BENE4 | <i>Betula neoalaskana</i> | 1-3.3-7 | 43 | 12.0 |

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Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 10-10-10 | 14 | 12.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 5-15-20 | 86 | 35.9 |
| PIGL | <i>Picea glauca</i> | 5-12.5-20 | 86 | 32.7 |
| BENE4 | <i>Betula neoalaskana</i> | 5-12.5-25 | 57 | 26.7 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 2-11.4-25 | 71 | 28.5 |
| POTR5 | <i>Populus tremuloides</i> | 2-14.7-40 | 43 | 25.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 21-49-92 | 1.4-7-15.5 | 6-40-73 | 20 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 20-47.9-115 | 7 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | | Moose | Unknown |
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—7; plant species per stop (min-avg-max)—18-24.4-40

Community Phase HCPC



Rooting Depth (cm): Min RV Max
152 152 152

Restrictive Features: None recorded

Drainage Class: Excessively drained, somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
3 3 3

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

Subsurface Layer

Thickness (cm): Min RV Max
149 149 149

Texture: Gravelly sandy loam, extremely gravelly loamy coarse sand

AWC (cm/cm): Min RV Max
0.02 0.08 0.12

pH: Min RV Max
7.9 8 8.1

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

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Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 4-4 | 18-18 | 90-90 | 20-20 | 4-4 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 2-6 | --- | --- |
| FM (4-24 inches) | --- | 4-9 | --- | --- |
| FT (>24 inches) | --- | 3-3 | --- | --- |
| SD (<8 inches) | --- | --- | 4-5 | --- |
| SL (8-36 inches) | --- | --- | 7-7 | --- |
| SM (3-10 feet) | --- | --- | 3-7 | --- |
| ST (>10 feet) | --- | --- | 5-5 | --- |
| TR (<15 feet) | --- | --- | --- | 15-15 |
| TM (15-40 feet) | --- | --- | --- | 10-25 |
| TT (>40 feet) | --- | --- | --- | 30-30 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 6-6-6 | 100 | 24.5 |
| ORSE | <i>Orthilia secunda</i> | 3-3-3 | 100 | 17.3 |
| GORE2 | <i>Goodyera repens</i> | 2-2-2 | 100 | 14.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 9-9-9 | 100 | 30.0 |
| EQSC | <i>Equisetum scirpoides</i> | 5-5-5 | 100 | 22.4 |
| GABO2 | <i>Galium boreale</i> | 4-4-4 | 100 | 20.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| LUAR2 | <i>Lupinus arcticus</i> | 3-3-3 | 100 | 17.3 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| ARUV | <i>Arctostaphylos uva-ursi</i> | 5-5-5 | 100 | 22.4 |
| VIED | <i>Viburnum edule</i> | 4-4-4 | 100 | 20.0 |

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Stratum Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|---------------------------|--|------------------|-----------------------------------|
| ROAC | <i>Rosa acicularis</i> | 7-7-7 | 100 | 26.5 |
| JUCO6 | <i>Juniperus communis</i> | 7-7-7 | 100 | 26.5 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|---|--|------------------|-----------------------------------|
| SHCA | <i>Shepherdia canadensis</i> | 7-7-7 | 100 | 26.5 |
| COSES | <i>Cornus sericea</i> ssp. <i>sericea</i> | 3-3-3 | 100 | 17.3 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| SALIX | <i>Salix</i> | 5-5-5 | 100 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| PIGL | <i>Picea glauca</i> | 15-15-15 | 100 | 38.7 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|----------------------------|--|------------------|-----------------------------------|
| PIGL | <i>Picea glauca</i> | 25-25-25 | 100 | 50.0 |
| POTR5 | <i>Populus tremuloides</i> | 10-10-10 | 100 | 31.6 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| PIGL | <i>Picea glauca</i> | 30-30-30 | 100 | 54.8 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> <u>Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------------|
| <i>Picea glauca</i> | 75-78-80 | 4.7-6-9.25 | 34-51-69 | 4 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 103-103-103 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—22-22-22

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum*

Ecological Classification ID: F231XY111AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Alluvial fans, escarpments, high flood plains, hills, mountains, terraces

Slope (percent): Min Max

1 65

Elevation (feet): Min Max

656 3,281

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

5 75

Flooding: Frequency Duration

None None

Ponding: Frequency Duration

None None

Runoff: Medium to very high

Frost-Free Days: Min Max

20 110

Mean Annual Precipitation (inches): Low High

10 27

Mean Annual Air Temperature (°F): Low High

19 28

Monthly Data:

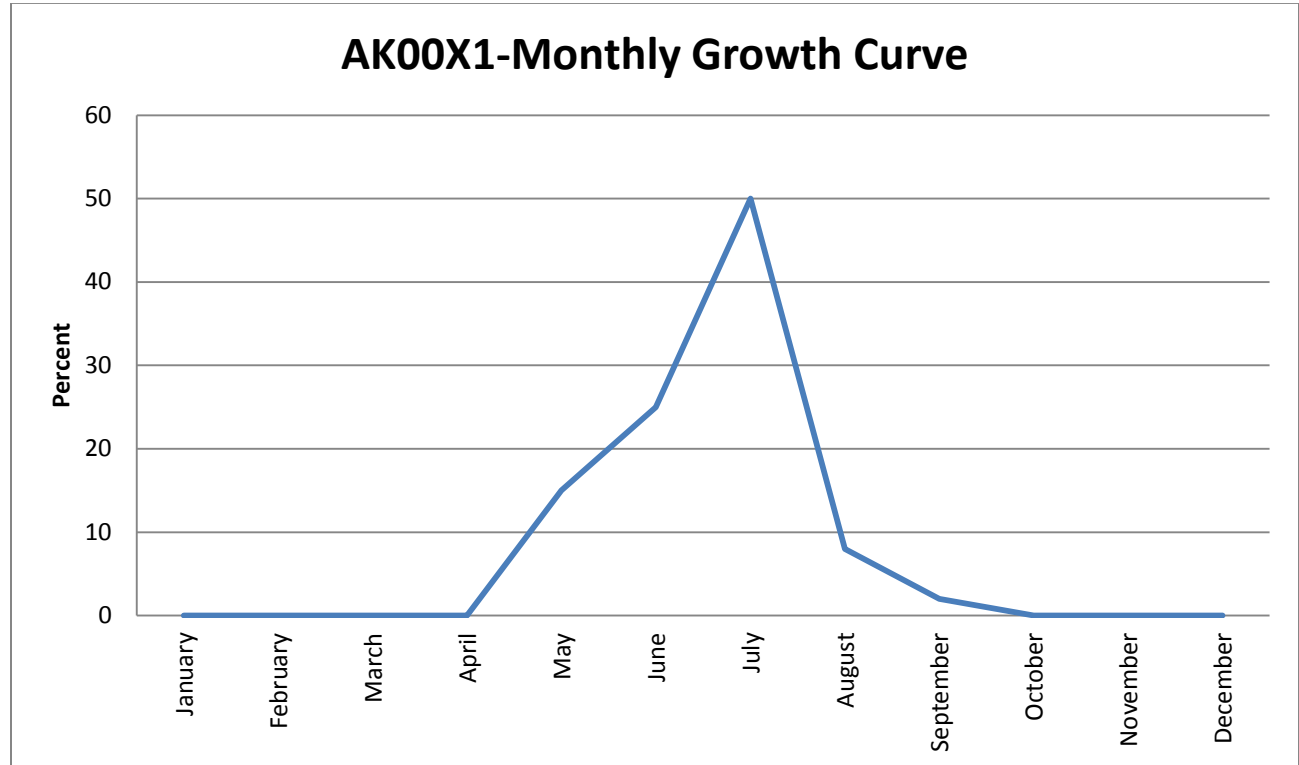
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH1—D31-Boreal taiga silty colluvial slopes, frozen
 D31BH1—D31-Boreal taiga silty eolian slopes, frozen
 D31BH3—D31-Boreal taiga silty eolian slopes, frozen
 D31BH6—D31-Boreal forest loamy depressions
 D31BH7—D31-Boreal forest gravelly colluvial slopes, frozen
 D31CF1—D31-Boreal forest gravelly colluvial slopes, frozen
 D31HL1—D31-Boreal taiga silty colluvial slopes, frozen
 D31HL2—D31-Boreal taiga silty colluvial slopes, frozen
 D31KT1—D31-Boreal taiga silty eolian slopes, frozen
 D31LB1—D31-Boreal taiga silty eolian slopes, frozen
 D31LB2—D31-Boreal taiga silty colluvial slopes, frozen
 D31OF1—D31-Boreal forest gravelly colluvial slopes, frozen
 D31TH1—D31-Boreal forest loamy depressions
 D31TH1—D31-Boreal taiga silty colluvial slopes, frozen
 D31TL1—D31-Boreal taiga silty eolian slopes, frozen
 D31UC2—D31-Boreal forest gravelly colluvial slopes, frozen
 D31UC3—D31-Boreal taiga silty colluvial slopes, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, acid, subgelic Folistic Haplorthels; coarse-loamy, mixed, superactive, acid, subgelic Folistic Haploturbels; coarse-loamy, mixed, superactive, nonacid, subgelic Typic Haplorthels; loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels

Dominant Parent Material: Organic material over gravelly colluviums, organic material over loamy cryoturbate, organic material over loess over gravelly colluviums, organic material over silty colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy, loamy-skeletal

Saturated Hydraulic Conductivity: Moderately low to high

AWC Total (cm): Low RV High
12 24 53

pH: Low RV High
3.4 5.7 7.8

Effective CEC (me/100g): Low High
13.2 40

CEC (me/100g): Min RV Max
4 23.7 62

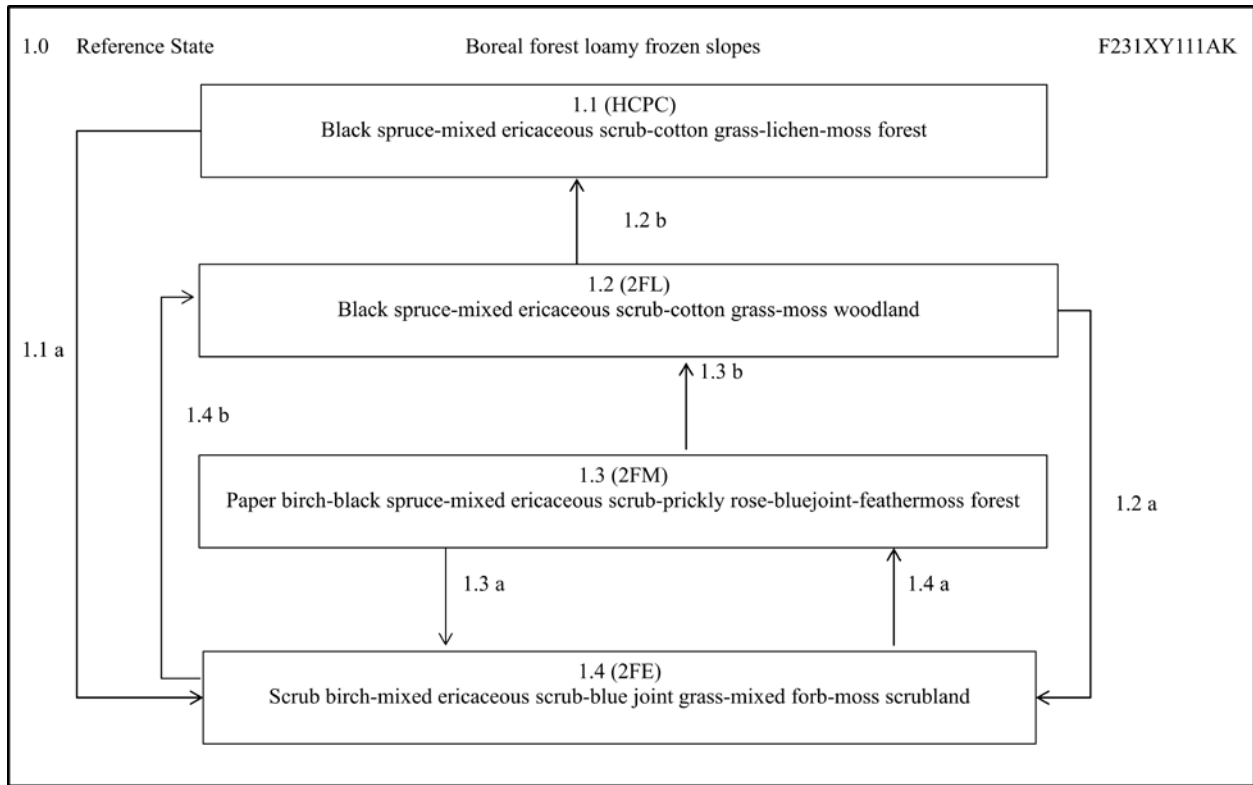
Organic Matter (percent): Low RV High
2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
0.2 1 1.38

Plant Community Phases

| | |
|--|-------------|
| Ecological Site Description ID: | F231XY111AK |
| Ecological Dynamics of the Site: | |
| <p>This boreal ecological site is on summits, shoulders, and backslopes of hills and mountains. It is on all aspects. Because of the wide variation in landscape position, slope varies substantially (1 to 58%). For the climax phase community, the organic mat is 10 to 40 centimeters thick, and the soils have permafrost. For community phase 1.1, the soils are classified as Haplorthels or Haploturbels and are composed of organic matter over loamy cryoturbate. The soils typically are saturated, mainly because of the thick organic mat. The climax phase is characterized by black spruce forest with an understory of ericaceous shrubs and moss.</p> <p>Fire resulted in four documented phases. It is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. For this ecological site, low-severity fire events are more typical than high-severity fire events. The fire events appear to cause differences in the depth of the organic material on the soil surface, the presence and/or depth to permafrost, and the present and potential vegetation.</p> | |

State and Transition Diagram:



State and Transition Diagram:

1

State Name:

Reference


State Narrative:

Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous trees, which are believed to directly relate to the time since the last fire event and the severity of the burn.


During a low-severity fire, minimal proportions of the organic mat are consumed and mineral soils typically are not exposed. Permafrost typically remains in the soil profile, and water commonly perches on it. Graminoids and scrubs quickly recolonize and become dominant on the site from the below-ground root reserves that were not consumed in the fire event. Because black spruce has semi-serotinous cones, it quickly reestablishes after fire events. With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.2.

During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost commonly thaws in the soil profile, and the site becomes drier. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow). With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.3.

| | |
|--|--|
| | <p>The fire return interval likely plays a significant role in the structure of black spruce forests. Longer fire return intervals favor development of community phase 1.1, and shorter fire return intervals favor development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|--|--|

| | | | |
|--|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Black Spruce-Mixed Ericaceous Scrub-Cotton Grass-Lichen-Moss Forest |
| Community Phase Narrative: | | | |
| <p>The majority of the tree cover is in the medium and stunted tree strata (total mature tree cover ~25%). <i>Picea mariana</i> is the dominant tree species, but <i>Picea glauca</i> and <i>Betula neoalaskana</i> are present as limited cover. The majority of the scrub cover is in the low and dwarf strata (total shrub cover ~65%). Common shrubs include <i>Betula glandulosa</i>, <i>Ledum palustre</i>, <i>Vaccinium uliginosum</i>, <i>Rubus chamaemorus</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids are less abundant than shrubs (~20% cover), and the most common species are <i>Carex bigelowii</i> and <i>Eriophorum vaginatum</i>. Forbs are a minor vegetative component. Lichen and moss are extensive as ground cover (combined ~75% cover). The most common lichen is <i>Cladina sp.</i>, and the most common moss species are <i>Sphagnum sp.</i>, <i>Hylocomium splendens</i>, and <i>Pleurozium schreberi</i>. Twenty-one observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|---|
| Pathway Number: | Pathway Name & Description: |
| 1.1a | <p>Fire.</p> <p>For this ecological site, phase 1.1 has the longest fire return interval.</p> |

| | | | |
|---|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Black Spruce-Mixed Ericaceous Scrub-Cotton Grass-moss Woodland |
| Community Phase Narrative: | | | |
| <p>The majority of the tree cover is in the medium, stunted, and regenerative tree strata (total mature tree cover ~20%). <i>Picea mariana</i> is the dominant tree species, but <i>Betula neoalaskana</i> is also present. The majority of the shrub cover is in the low shrub stratum (total shrub cover ~70%). Common shrubs include <i>Ledum palustre</i>, <i>Vaccinium uliginosum</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids are less abundant in this phase as compared to community phase 1.1, but <i>Eriophorum vaginatum</i> is present. Forbs are a minor vegetative component. As compared to phase 1.1, lichen makes up less of the overall cover (~20%). Moss is extensive as ground cover, and common species include <i>Sphagnum sp.</i>, <i>Hylocomium splendens</i>, and <i>Pleurozium schreberi</i>. Eighteen observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. |
| 1.2b | Normal time and growth without fire. Black spruce woodland matures and eventually becomes an open forest. Fewer paper birch trees are in the stand. The fire return interval is presumed to be shorter than that of phase 1.1 and longer than that of phase 1.4. |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Paper Birch-Black Spruce-Mixed Ericaceous Scrub-Prickly Rose-Bluejoint-Feathermoss Forest |

| Community Phase Narrative: | |
|---|--|
| <p>The tree cover is in the medium and regenerative tree strata (~30% mature tree cover). The stand consists of an even distribution of <i>Betula neoalaskana</i> and <i>Picea mariana</i>. Shrubs are primarily in the low shrub stratum (total shrub cover ~60%). Common shrubs include <i>Alnus viridis</i>, <i>Ledum palustre</i>, <i>Rosa acicularis</i>, and <i>Vaccinium vitis-idaea</i>. As compared to community phases 1.1 and 1.2, this phase has much more forb cover (~10% cover). Common forbs include <i>Lycopodium annotinum</i>, <i>Cornus canadensis</i>, and <i>Equisetum sylvaticum</i>. <i>Calamagrostis canadensis</i> is the most common graminoid species, but graminoids are a minor vegetative component. Moss is abundant as ground cover (~35% cover), and the most common species is <i>Hylocomium splendens</i>. Three observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Fire. |
| 1.3b | Normal time and growth without fire event. Permafrost moves upward into the soil profile, and eventually paper birch is replaced by black spruce and an ericaceous scrub community. Areas of phase 1.3 are rare; therefore, the associated transitions for this phase are the least understood. The fire return interval is presumed to be shorter than that of phase 1.1 and longer than that of phase 1.4. |

| | |
|-----------|--|
| Phase 1.4 |  |
|-----------|--|

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| | | | |
|--|---|-----------------------|---|
| Community Phase Number: | 1.4 | Community Phase Name: | Scrub Birch-Mixed Ericaceous Scrub-Blue Joint Grass-Mixed Forb-Moss Scrubland |
| Community Phase Narrative: | | | |
| <p>Although trees are present, shrubs and graminoids are the dominant forms of vegetation. A limited amount of mature <i>Picea mariana</i> is present (~3% cover). Seedlings of <i>Picea mariana</i>, <i>Picea glauca</i>, <i>Populus tremuloides</i>, and <i>Betula neoalaskana</i> are present but not abundant (~10% cover). Shrubs primarily are in the low shrub stratum (total shrub cover ~60%). Common shrubs include <i>Betula glandulosa</i>, <i>Ledum palustre</i>, <i>Vaccinium uliginosum</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids are abundant (~30% cover), and the most common species is <i>Calamagrostis canadensis</i>. Forbs are less abundant than graminoids (~20% cover), and common species include <i>Equisetum sylvaticum</i> and <i>Chamerion angustifolium</i>. Moss is abundant as ground cover (~30%), but feathermoss is not a dominant species. Thirty-seven observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.4a | Normal time and growth without fire. Associated with a high-severity fire event, a less common disturbance event for this ecological site. | | |
| 1.4b | <p>Normal time and growth without fire. Associated with a low-severity fire event, the most common disturbance event for this ecological site.</p> <p>The average thickness of the organic matter is 13 centimeters after the burn event for the thirty-seven observations made in phase 1.4, indicating that exposure of the mineral soil is rare on this ecological site.</p> | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
 33 65.4 113

Restrictive Feature: Permafrost

Drainage Class: Poorly drained, well drained

Surface Layer

Thickness (cm): Min RV Max
 4 11.6 26

Texture: Mucky peat, peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 4.1 5.4 6.6

Subsurface Layer

Thickness (cm): Min RV Max
 29 53.9 87

Texture: Cobbly silt loam, very cobbly loam, channery clay loam, channery silt loam, channery sandy loam, extremely channery clay loam, silt loam

AWC (cm/cm): Min RV Max
 0.13 0.21 0.25

pH: Min RV Max
 5 6 7.3

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-25 | 0-85 | 0-90 | 0-70 | 0-20 | 0-5 | 0-4 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 4-4 | --- | --- |
| FT (>24 inches) | --- | 3-5 | --- | --- |
| SD (<8 inches) | --- | --- | 3-3 | --- |
| SL (8-36 inches) | --- | --- | 3-6 | --- |
| SM (3-10 feet) | --- | --- | 4-4 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 2-23.5-50 | 43 | 31.9 |
| CABI5 | <i>Carex bigelowii</i> | 1-10.3-30 | 30 | 17.5 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 2-12-30 | 22 | 16.1 |
| ARLA2 | <i>Arctagrostis latifolia</i> | 35-35-35 | 3 | 9.7 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 4-22.6-60 | 43 | 31.3 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 5-18.7-55 | 43 | 28.4 |
| CHAN9 | <i>Chamerion angustifolium</i> | 1-4.6-15 | 57 | 16.2 |
| EQAR | <i>Equisetum arvense</i> | 30-30-30 | 3 | 9.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 0.1-10.6-35 | 22 | 15.2 |
| POAL11 | <i>Polygonum alpinum</i> | 0-3.9-8 | 35 | 11.8 |

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Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------------|---------------------------------|------------------|----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-8.8-65 | 92 | 28.4 |
| RUCH | <i>Rubus chamaemorus</i> | 0-3.7-10 | 54 | 14.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 6-21.4-40 | 51 | 33.1 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 10-23.9-85 | 41 | 31.1 |
| VAUL | <i>Vaccinium uliginosum</i> | 0-7.6-35 | 70 | 23.1 |
| SPST3 | <i>Spiraea stevenii</i> | 1-6.3-20 | 54 | 18.5 |
| B EGL | <i>Betula glandulosa</i> | 0-6.2-20 | 24 | 12.3 |
| ROAC | <i>Rosa acicularis</i> | 0-3.1-20 | 43 | 11.5 |
| SAPU15 | <i>Salix pulchra</i> | 1-5.7-15 | 19 | 10.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| B EGL | <i>Betula glandulosa</i> | 5-19.4-45 | 30 | 24.0 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 80-80-80 | 3 | 14.7 |
| SABE2 | <i>Salix bebbiana</i> | 0.1-5.6-15 | 30 | 12.9 |
| SAPU15 | <i>Salix pulchra</i> | 0-5.3-10 | 22 | 10.7 |
| SALIX | <i>Salix</i> | 4-7-10 | 14 | 9.7 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 2-5-7 | 19 | 9.7 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-9.5-20 | 11 | 10.1 |
| SAGL | <i>Salix glauca</i> | 30-30-30 | 3 | 9.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 0-7-35 | 84 | 24.2 |
| BENE4 | <i>Betula neoalaskana</i> | 0-7.9-35 | 65 | 22.6 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 1-8.3-35 | 19 | 12.5 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Betula neoalaskana</i> | --- | 2.9-3-3.2 | 17-18-20 | 2 | B |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 0-4.2-10 | 5 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Moose | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | | | Spring |
| Slight use | | | Winter |
| Slight use | Other | Moose | Spring |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | | Spring |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Summer |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: *Salix candida*

Species Richness: Number of stops—37; plant species per stop (min-avg-max)—13-21.6-35

Community Phase 2FM



Rooting Depth (cm): Min RV Max
49 63 77

Restrictive Feature: Permafrost

Drainage Class: Poorly drained, well drained

Surface Layer

Thickness (cm): Min RV Max
15 15 15

Texture: Slightly decomposed plant material

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.5 4.8 6

Subsurface Layer

Thickness (cm): Min RV Max
34 48 62

Texture: Silt loam, very fine sandy loam

AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
5.5 6.4 7.5

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 1-5 | 1-60 | 25-60 | 3-10 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 3-3 | --- | --- | --- |
| FD (<4 inches) | --- | 1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-1 | --- | --- |
| SD (<8 inches) | --- | --- | 15-15 | --- |
| SL (8-36 inches) | --- | --- | 10-5 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TM (15-40 feet) | --- | --- | --- | 15-15 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|------------------------------|------------------|-------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 3-3-3 | 33 | 10.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|------------------------------|------------------|-------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-20-35 | 67 | 36.5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------|---------------------------------|------------------|----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 25-25-25 | 33 | 28.9 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------|---------------------------------|------------------|----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 15-15-15 | 33 | 22.4 |
| LYAN2 | <i>Lycopodium annotinum</i> | 0.1-5.1-10 | 67 | 18.3 |
| CHAN9 | <i>Chamerion angustifolium</i> | 1-2-3 | 67 | 11.5 |
| EQPR | <i>Equisetum pratense</i> | 1-2-3 | 67 | 11.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------------|---------------------------------|------------------|----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 15-15-15 | 33 | 22.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| ROAC | <i>Rosa acicularis</i> | 3-5.3-10 | 100 | 23.1 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 15-15-15 | 33 | 22.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-5-5 | 67 | 18.3 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 10-10-10 | 33 | 18.3 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-12.5-15 | 67 | 28.9 |
| SALIX | <i>Salix</i> | 10-10-10 | 33 | 18.3 |
| SABE2 | <i>Salix bebbiana</i> | 8-8-8 | 33 | 16.3 |
| SAAR3 | <i>Salix arbusculoides</i> | 5-5-5 | 33 | 12.9 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 1-4.7-8 | 100 | 21.6 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 33 | 12.9 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 15-21.7-25 | 100 | 46.5 |
| PIMA | <i>Picea mariana</i> | 15-15-15 | 67 | 31.6 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|----------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Picea mariana</i> | 21-36-96 | 1.6-3-4.9 | 15-28-79 | 6 | B |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 1-19-28 | 3 |

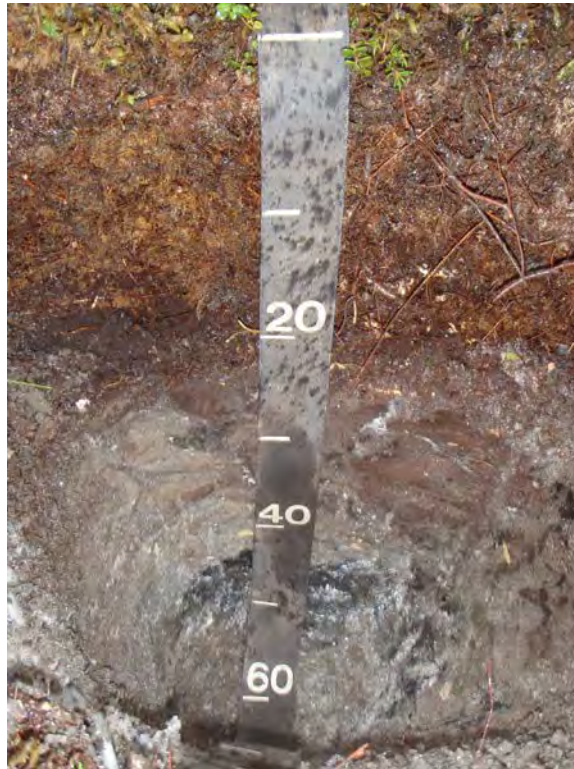
Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | | Moose | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—15-18.7-26

Community Phase 2FL



Rooting Depth (cm): Min RV Max
27 50 63

Restrictive Feature: Permafrost

Drainage Class: Poorly drained, well drained

Surface Layer

Thickness (cm): Min RV Max
9 25.5 35

Texture: Peat, slightly decomposed plant material

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.8 4.4 5.4

Subsurface Layer

Thickness (cm): Min RV Max
18 24.5 28

Texture: Clay loam, loam, silt loam

AWC (cm/cm): Min RV Max
0.22 0.23 0.25

pH: Min RV Max
4.7 5.5 6.4

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 3-40 | 25-90 | 5-60 | 2-10 | 0-7 | 0-2 | 0-2 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 5-5 | --- | --- | --- |
| GT (>24 inches) | 70-70 | --- | --- | --- |
| FD (<4 inches) | --- | 5-5 | --- | --- |
| FM (4-24 inches) | --- | 7-7 | --- | --- |
| FT (>24 inches) | --- | 6-6 | --- | --- |
| SD (<8 inches) | --- | --- | 35-7 | --- |
| SL (8-36 inches) | --- | --- | 10-25 | --- |
| TR (<15 feet) | --- | --- | --- | 3-3 |
| TS (<15 feet) | --- | --- | --- | 30-30 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|------------------------------|------------------|-------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 5-22.5-40 | 25 | 23.7 |
| CAREX | <i>Carex</i> | 5-12.5-30 | 17 | 14.4 |
| CABI5 | <i>Carex bigelowii</i> | 2-9.8-20 | 17 | 12.7 |
| CACA12 | <i>Carex capillaris</i> | 35-35-35 | 4 | 12.1 |
| ERAN6 | <i>Eriophorum angustifolium</i> | 35-35-35 | 4 | 12.1 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-5.3-20 | 25 | 11.5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------------|---------------------------------|------------------|----------------------------|
| CAREX | <i>Carex</i> | 1-35.5-70 | 8 | 17.2 |
| CACA4 | <i>Calamagrostis canadensis</i> | 5-9.5-15 | 17 | 12.6 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 1-3.1-6 | 38 | 10.8 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 0.1-9.1-30 | 46 | 20.4 |
| GELI2 | <i>Geocaulon lividum</i> | 2-6.4-15 | 29 | 13.7 |
| PEFR5 | <i>Petasites frigidus</i> | 0-3.4-8 | 25 | 9.2 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------|---------------------------------|------------------|----------------------------|
| POAL11 | <i>Polygonum alpinum</i> | 1-4.5-10 | 25 | 10.6 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------------|---------------------------------|------------------|----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-11.4-40 | 100 | 33.7 |
| EMNI | <i>Empetrum nigrum</i> | 0.1-10.4-40 | 42 | 20.8 |
| RUCH | <i>Rubus chamaemorus</i> | 0-4.6-25 | 67 | 17.5 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-20-35 | 8 | 12.9 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 5-23.1-50 | 54 | 35.4 |
| LEGR | <i>Ledum groenlandicum</i> | 10-33.1-65 | 33 | 33.2 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-9.7-25 | 75 | 26.9 |
| BENA | <i>Betula nana</i> | 3-10-15 | 25 | 15.8 |
| B EGL | <i>Betula glandulosa</i> | 0-9.7-25 | 25 | 15.5 |
| SPST3 | <i>Spiraea stevenii</i> | 1-4-10 | 38 | 12.2 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-7.3-10 | 13 | 9.6 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 0-7.8-15 | 38 | 17.1 |
| BENA | <i>Betula nana</i> | 5-22.5-40 | 8 | 13.7 |
| B EGL | <i>Betula glandulosa</i> | 4-7.8-10 | 21 | 12.7 |
| SAPU15 | <i>Salix pulchra</i> | 1-6-15 | 17 | 10.0 |
| SALIX | <i>Salix</i> | 3-4.4-10 | 21 | 9.6 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 3-15.5-55 | 96 | 38.6 |
| BENE4 | <i>Betula neoalaskana</i> | 1-4.2-8 | 54 | 15.1 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 10-20.2-50 | 33 | 26.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 3-12.3-30 | 71 | 29.5 |
| BENE4 | <i>Betula neoalaskana</i> | 0.1-4.9-15 | 25 | 11.0 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 3-9.3-15 | 13 | 10.8 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Betula neoalaskana</i> | --- | 2.8-3-3.4 | 23-25-27 | 2 | G |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 1-23.8-83 | 11 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Other | | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | | | Spring |
| Slight use | Grasses and sedges | Caribou | Unknown |
| Slight use | Other woody plants | Moose | Summer |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | Moose | Summer |

Notable Plants: *Stellaria alaskana*, *Salix candida*

Species Richness: Number of stops—24; plant species per stop (min-avg-max)—19-26.9-38

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 23 75 133

Restrictive Feature: Permafrost

Drainage Class: Poorly drained, well drained

Surface Layer

Thickness (cm): Min RV Max
 10 31 42

Texture: Peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 3.9 4.8 5.3

Subsurface Layer

Thickness (cm): Min RV Max
 13 44 91

Texture: Gravelly loam, gravelly silt loam, permanently frozen silt loam

AWC (cm/cm): Min RV Max
 0.2 0.22 0.25

pH: Min RV Max
 4.7 5.4 6.3

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 9-90 | 10-90 | 0-50 | 1-10 | 0-3 | 0-2 | 0-3 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 2-2 | --- | --- |
| FM (4-24 inches) | --- | 1-2 | --- | --- |
| SD (<8 inches) | --- | --- | 10-15 | --- |
| SL (8-36 inches) | --- | --- | 10-5 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TM (15-40 feet) | --- | --- | --- | 20-20 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 5-12.7-30 | 33 | 20.6 |
| ERBR6 | <i>Eriophorum brachyantherum</i> | 20-40-60 | 10 | 19.5 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 0-14-40 | 24 | 18.3 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-7.2-25 | 38 | 16.6 |
| CAREX | <i>Carex</i> | 3-7.7-15 | 29 | 14.8 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 55-55-55 | 5 | 16.2 |
| CACA4 | <i>Calamagrostis canadensis</i> | 20-20-20 | 5 | 9.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 3-6-10 | 14 | 9.3 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 1-6.8-15 | 43 | 17.0 |
| PEFR5 | <i>Petasites frigidus</i> | 5-10-15 | 24 | 15.4 |
| BORI2 | <i>Boykinia richardsonii</i> | 2-6.3-15 | 14 | 9.5 |

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Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------------|--|------------------|-----------------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-9-15 | 100 | 30.0 |
| EMNI | <i>Empetrum nigrum</i> | 3-8.4-15 | 48 | 20.0 |
| RUCH | <i>Rubus chamaemorus</i> | 1-4.5-15 | 71 | 18.0 |
| VAOX | <i>Vaccinium oxycoccos</i> | 0-3-10 | 67 | 14.2 |
| ARRU | <i>Arctostaphylos rubra</i> | 1-5.7-15 | 29 | 12.7 |
| CATE11 | <i>Cassiope tetragona</i> | 5-10-15 | 10 | 9.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------------------|--|------------------|-----------------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 0-11.4-25 | 71 | 28.5 |
| LEGR | <i>Ledum groenlandicum</i> | 5-15.5-40 | 52 | 28.5 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-13.7-25 | 48 | 25.5 |
| B EGL | <i>Betula glandulosa</i> | 5-12.8-25 | 29 | 19.1 |
| SALIX | <i>Salix</i> | 5-10.8-15 | 19 | 14.3 |
| SAPU15 | <i>Salix pulchra</i> | 5-8.3-10 | 14 | 10.9 |
| BENA | <i>Betula nana</i> | 2-3.8-10 | 29 | 10.5 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 2-6.7-15 | 14 | 9.8 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-6.7-10 | 14 | 9.8 |
| SPST3 | <i>Spiraea stevenii</i> | 0-2.6-5 | 33 | 9.3 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|-------------------------------------|--|------------------|-----------------------------------|
| B EGL | <i>Betula glandulosa</i> | 0.1-8.4-15 | 29 | 15.4 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-7.2-10 | 24 | 13.1 |
| SABE2 | <i>Salix bebbiana</i> | 2-6-15 | 24 | 12.0 |
| SAPU15 | <i>Salix pulchra</i> | 1-3.6-8 | 33 | 10.9 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 25-25-25 | 5 | 10.9 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 2-8.7-15 | 86 | 27.3 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 10-20.9-35 | 52 | 33.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 0-17.8-50 | 81 | 38.0 |
| PIGL | <i>Picea glauca</i> | 10-12.5-15 | 10 | 10.9 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|--------------------|
| <i>Picea mariana</i> | 46-98-176 | 1.5-4-7.3 | 6-22-51 | 38 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 2-32.3-75 | 17 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Moose | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—21; plant species per stop (min-avg-max)—13-27.1-41

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca*/*Alnus-Rosa acicularis*

Ecological Classification ID: F231XY117AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Depressions of hills, drainageways of plains, escarpments, hills

Slope (percent): Min Max
5 35

Elevation (feet): Min Max
656 2,953

Range of Aspect Direction: East to west (clockwise)

Water Table Depth (cm): Min Max
40 60

Flooding: None

Ponding: None

Runoff: High

Frost-Free Days: Min Max
20 110

Mean Annual Precipitation (inches): Low High
10 20

Mean Annual Air Temperature (°F): Low High
23 28

Monthly Data:

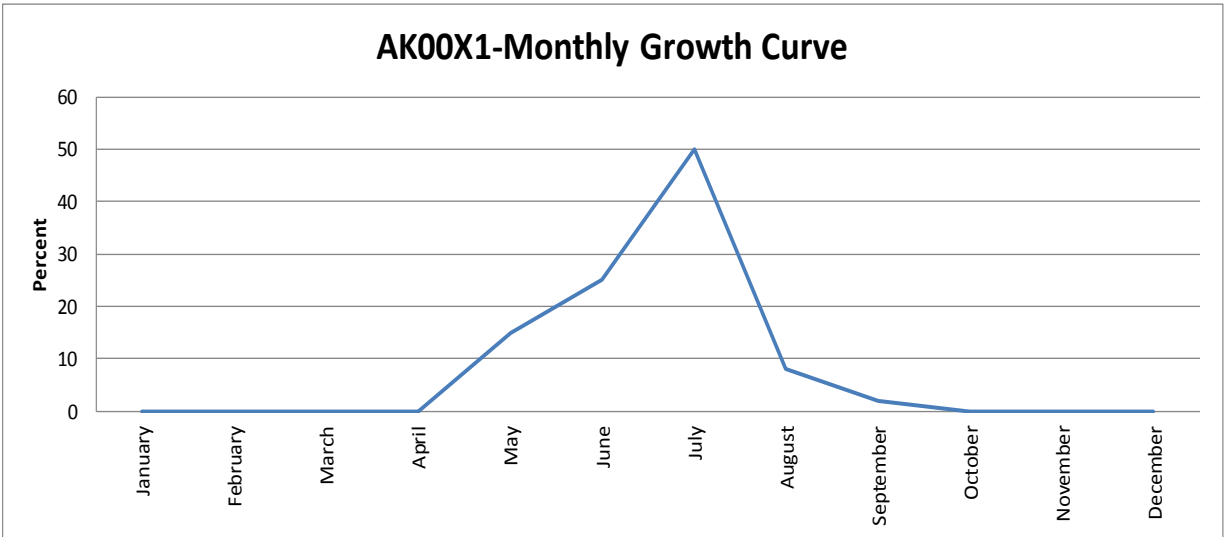
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31TL1—D31-Boreal forest loamy colluvial slopes

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Folistic Haplorthels

Dominant Parent Material: Organic material over loamy colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 15 29 52

pH: Low RV High
 3.4 6.8 8

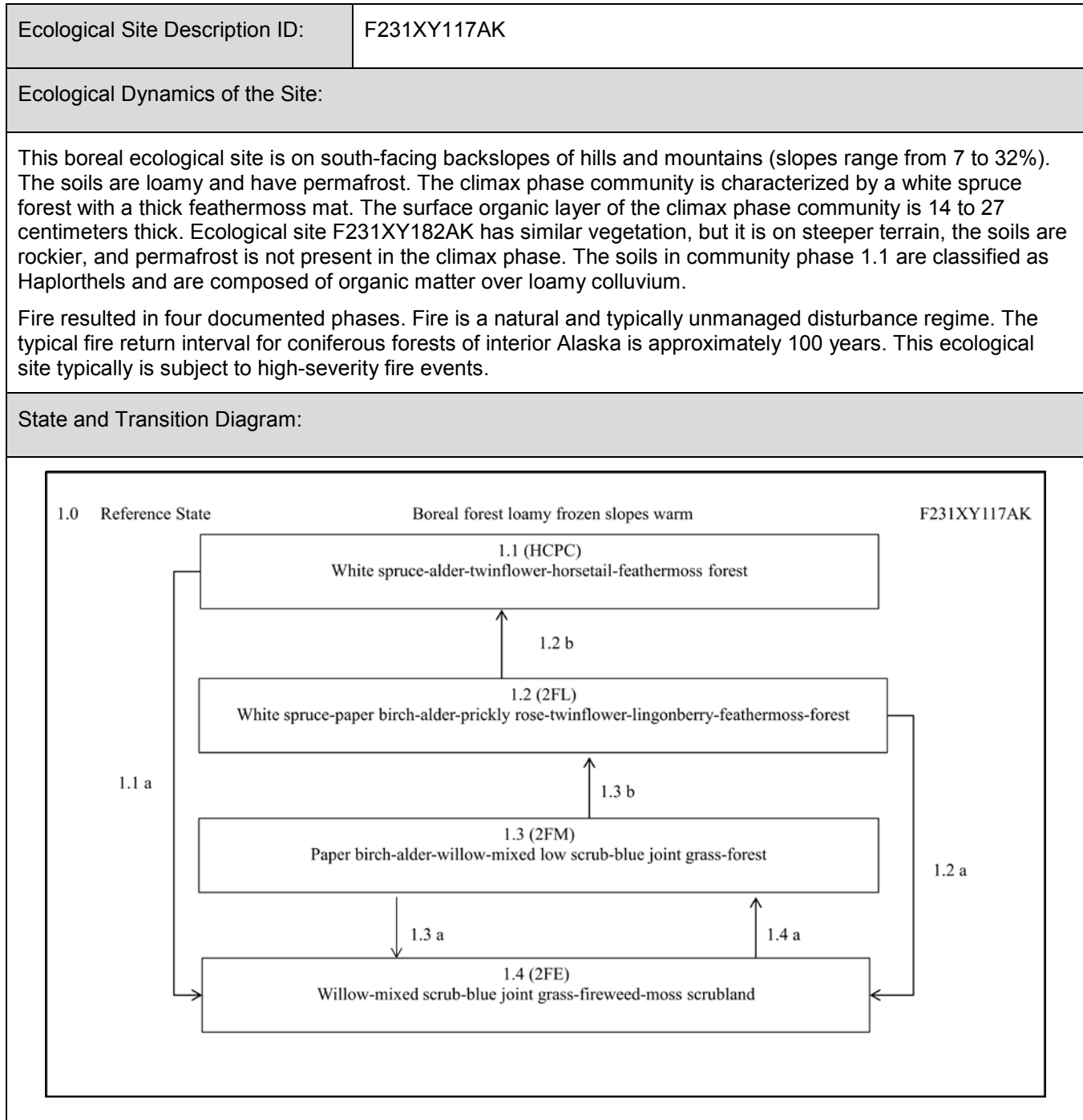
Effective CEC (me/100g): Low High
 14.2 40

CEC (me/100g): Min RV Max
 4.9 19.2 62


Organic Matter (percent): Low RV High
 2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 0.9 1.14


Plant Community Phases



| | | | |
|-------------------------------|--|-------------|-----------|
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event and the severity of the burn.</p> <p>A high-severity fire regime is the typical fire disturbance for this ecological site. During a high-severity fire, large proportions of the organic mat are consumed and the mineral soils typically are exposed. Permafrost commonly drops out of the soil profile, and the site becomes drier. Many pre-fire species regenerate after fire, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>The fire return interval plays a significant role in the structure of the forest. A longer fire return interval favors the development of community phase 1.1, and a shorter fire return interval favors the development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White Spruce-Alder-Twinflower-Horsetail-Feathermoss Forest |

| Community Phase Narrative: | |
|--|---|
| <p>The majority of the tree cover is in the tall tree stratum (total mature tree cover ~45%). <i>Picea glauca</i> is the dominant tree species, but <i>Betula neoalaskana</i> is also present. The majority of the shrub cover is in the tall and dwarf strata (total shrub cover ~60%). Common shrubs include <i>Alnus viridis</i>, <i>Linnaea borealis</i>, and <i>Arctostaphylos rubra</i>. Forbs are a major vegetative component (25% cover). Common species include <i>Equisetum sp.</i> and <i>Geocaulon lividum</i>. Graminoids and lichen are minor vegetative components. Moss forms an extensive mat (~85% cover), and the primary species is <i>Hylocomium splendens</i>. Three observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1. 1 a | Fire. For this ecological site, community phase 1.1 has the longest fire return interval. |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | White Spruce-Paper Birch-Alder-Prickly Rose-Twinflower-Lingonberry-Feathermoss-Forest |

| Community Phase Narrative: | |
|---|--|
| <p>The majority of the tree cover is in the tall and medium tree strata (total mature tree cover ~50%). The dominant tree species are a mixture of <i>Picea glauca</i> and <i>Betula neoalaskana</i>. <i>Picea mariana</i> is common, but is a minor component. Shrub cover is evenly distributed among the tall, low, and dwarf shrub strata (total shrub cover ~50%). Common shrubs include <i>Alnus viridis</i>, <i>Rosa acicularis</i>, <i>Ledum palustre</i>, <i>Linnaea borealis</i>, and <i>Vaccinium vitis-idaea</i>. Forbs are common (~30% cover). Common species include <i>Equisetum sp.</i>, <i>Cornus canadensis</i>, and <i>Geocaulon lividum</i>. Graminoids and lichen are minor vegetative components. Moss forms an extensive mat (~50% cover), and the primary species is <i>Hylocomium splendens</i>. Six observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. |
| 1.2b | <p>Normal time and growth without fire. Paper birch is eventually replaced by white spruce and results in a community resembling that of phase 1.1. The fire return interval is presumed to be shorter than that of community phase 1.1 but longer than that of community phase 1.3.</p> <p>Paper birch commonly occurs as standing dead trees, which indicates a transition to a phase that is dominantly white spruce.</p> |

| | |
|-----------|--|
| Phase 1.3 |  |
|-----------|--|

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| | | | |
|---|---|-----------------------|--|
| Community Phase Number: | 1.3 | Community Phase Name: | Paper Birch-Alder-Willow-Mixed Low Scrub-Blue Joint Grass-Forest |
| Community Phase Narrative: | | | |
| <p>The majority of the tree cover is in the tall and medium tree strata (total mature tree cover ~50%). The dominant tree species is <i>Betula neoalaskana</i>, but <i>Picea glauca</i> is also present. Shrubs are least abundant in this phase (~25%). Common species include <i>Alnus viridis</i>, <i>Salix bebbiana</i>, and <i>Rosa acicularis</i>. The forb cover is ~25%, and the graminoid cover is ~35%. Common forbs are <i>Equisetum sp.</i>, <i>Mertensia paniculata</i>, and <i>Cornus canadensis</i>, and a common graminoid is <i>Calamagrostis canadensis</i>. Lichen and moss are minor vegetative components.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | <p>Fire.</p> <p>Stands of paper birch are less likely to burn and fire is less likely to spread on these stands than on stands that are dominantly white spruce; however, burned stands of paper birch are in the study area. If community phase 1.3 is burned, the resulting community would resemble community phase 1.4.</p> | | |
| 1.3b | <p>Normal time and growth without fire. White spruce becomes codominant with paper birch, resulting in a community resembling that of community phase 1.2. The fire return interval is presumed to be shorter than that of community phase 1.2 but longer than that of community phase 1.4.</p> | | |

| | | | |
|---|-----|-----------------------|---|
| Phase 1.4 | | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Willow-mixed scrub-blue joint grass-fireweed-moss scrubland |
| Community Phase Narrative: | | | |
| This phase was observed in the field but was not sampled. | | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FM



Rooting Depth (cm): Min RV Max
64 64 64

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
11 11 11

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
5.3 5.3 5.3

Subsurface Layer

Thickness (cm): Min RV Max
53 53 53

Texture: Silt loam

AWC (cm/cm): Min RV Max
0.24 0.24 0.24

pH: Min RV Max
6.2 6.5 6.9

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-5 | 2-15 | 25-80 | 10-20 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):Min-Max

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 25-25 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| SL (8-36 inches) | --- | --- | 0.1-0.1 | --- |
| ST (>10 feet) | --- | --- | 10-10 | --- |
| TR (<15 feet) | --- | --- | --- | 5-7 |
| TM (15-40 feet) | --- | --- | --- | 2-2 |
| TT (>40 feet) | --- | --- | --- | 35-7 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 25-35-45 | 100 | 59.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 20-20-20 | 50 | 31.6 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 20-20-20 | 50 | 31.6 |
| EQPR | <i>Equisetum pratense</i> | 10-10-10 | 50 | 22.4 |
| MEPA | <i>Mertensia paniculata</i> | 3-4-5 | 100 | 20.0 |
| EQAR | <i>Equisetum arvense</i> | 3-3-3 | 50 | 12.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-5-5 | 50 | 15.8 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 10-10-10 | 50 | 22.4 |
| LEGR | <i>Ledum groenlandicum</i> | 10-10-10 | 50 | 22.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 15-15-15 | 50 | 27.4 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SABE2 | <i>Salix bebbiana</i> | 10-10-10 | 50 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 5-7.5-10 | 100 | 27.4 |
| PIGL | <i>Picea glauca</i> | 2-4.5-7 | 100 | 21.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 55-55-55 | 50 | 52.4 |
| PIGL | <i>Picea glauca</i> | 2-2-2 | 50 | 10.0 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 35-35-35 | 50 | 41.8 |
| PIGL | <i>Picea glauca</i> | 7-7-7 | 50 | 18.7 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 7.2-8-8.5 | 54-55-57 | 3 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 9-59.5-110 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Other | Winter |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—14-16-18

Community Phase 2FL



Rooting Depth (cm): Min RV Max
54 65 76

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
20 21 22

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.3 6.3 7.2

Subsurface Layer

Thickness (cm): Min RV Max
34 44 54

Texture: Gravelly silt loam, permanently frozen silt loam, silt loam

AWC (cm/cm): Min RV Max
0.21 0.24 0.25

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pH: Min RV Max
 5.8 6.6 7.1

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-20 | 30-80 | 5-70 | 5-18 | 0-2 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 15-15 | --- | --- | --- |
| FD (<4 inches) | --- | 1-3 | --- | --- |
| FM (4-24 inches) | --- | 0.01-3 | --- | --- |
| FT (>24 inches) | --- | 0.01-1 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-5 | --- |
| SL (8-36 inches) | --- | --- | 0.01-8 | --- |
| ST (>10 feet) | --- | --- | 10-15 | --- |
| TR (<15 feet) | --- | --- | --- | 2-5 |
| TM (15-40 feet) | --- | --- | --- | 10-2 |
| TT (>40 feet) | --- | --- | --- | 15-3 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 2-4-5 | 50 | 14.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 2-8.5-15 | 33 | 16.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 1-7.5-15 | 67 | 22.4 |
| GELI2 | <i>Geocaulon lividum</i> | 5-6-7 | 33 | 14.1 |
| ORSE | <i>Orthilia secunda</i> | 3-3.3-4 | 50 | 12.9 |
| GORE2 | <i>Goodyera repens</i> | 3-4.5-6 | 33 | 12.2 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 10-15-20 | 33 | 22.4 |
| GELI2 | <i>Geocaulon lividum</i> | 2-6.8-15 | 67 | 21.2 |
| EQPR | <i>Equisetum pratense</i> | 5-10-15 | 33 | 18.3 |
| EQAR | <i>Equisetum arvense</i> | 3-6-10 | 50 | 17.3 |
| MEPA | <i>Mertensia paniculata</i> | 1-2.8-5 | 67 | 13.5 |
| EQUIS | <i>Equisetum</i> | 7-7-7 | 17 | 10.8 |
| DEGL3 | <i>Delphinium glaucum</i> | 0.1-1.7-3 | 50 | 9.2 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 4-4.5-5 | 33 | 12.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-9.8-15 | 83 | 28.6 |
| LIBO3 | <i>Linnaea borealis</i> | 0.1-7.6-15 | 83 | 25.2 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 0.1-8-15 | 100 | 28.3 |
| LEGR | <i>Ledum groenlandicum</i> | 3-11-20 | 50 | 23.5 |
| VIDE | <i>Viburnum edule</i> | 1-4.2-7 | 67 | 16.8 |
| SHCA | <i>Shepherdia canadensis</i> | 0.1-2.6-5 | 33 | 9.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| SALIX | <i>Salix</i> | 5-7.5-10 | 33 | 15.8 |
| SHCA | <i>Shepherdia canadensis</i> | 2-3.5-5 | 33 | 10.8 |
| VIDE | <i>Viburnum edule</i> | 7-7-7 | 17 | 10.8 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-15-25 | 50 | 27.4 |
| SABE2 | <i>Salix bebbiana</i> | 10-10-10 | 33 | 18.3 |
| SALIX | <i>Salix</i> | 10-10-10 | 17 | 12.9 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-6-10 | 100 | 24.5 |
| BENE4 | <i>Betula neoalaskana</i> | 2-5.7-10 | 50 | 16.8 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 17 | 9.1 |

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Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 7-16.8-40 | 67 | 33.4 |
| BENE4 | <i>Betula neoalaskana</i> | 10-16.7-20 | 50 | 28.9 |
| PIMA | <i>Picea mariana</i> | 2-11-20 | 33 | 19.1 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 3-18.8-35 | 100 | 43.4 |
| BENE4 | <i>Betula neoalaskana</i> | 7-13.8-25 | 67 | 30.3 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 8.6-9-10.7 | 42-46-50 | 3 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 47-63-125 | 6 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | | Unknown |
| Slight use | Other woody plants | Other | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—24-30.5-42

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 14 43.5 73

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
 14 17.5 21

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 5.1 6.3 7.4

Subsurface Layer

Thickness (cm): Min RV Max
 0 26 52

Texture: Gravelly sandy loam

AWC (cm/cm): Min Avg Max
 0.12 0.13 0.14

pH: Min RV Max
 6.8 7.1 7.3

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-5 | 75-90 | 5-25 | 3-15 | 0-2 | 0-0 | 0-1 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 1-3 | --- | --- |
| FM (4-24 inches) | --- | 0.1-10 | --- | --- |
| SD (<8 inches) | --- | --- | 2-3 | --- |
| SL (8-36 inches) | --- | --- | 0.1-1 | --- |
| SM (3-10 feet) | --- | --- | 15-15 | --- |
| ST (>10 feet) | --- | --- | 15-15 | --- |
| TM (15-40 feet) | --- | --- | --- | 15-15 |
| TT (>40 feet) | --- | --- | --- | 40-40 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| CASC10 | <i>Carex scirpoidea</i> | 7-7-7 | 33 | 15.3 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 67 | 18.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQVA | <i>Equisetum variegatum</i> | 10-10-10 | 33 | 18.3 |
| GELI2 | <i>Geocaulon lividum</i> | 6-6-6 | 33 | 14.1 |
| PYGR | <i>Pyrola grandiflora</i> | 2-2.5-3 | 67 | 12.9 |
| ORSE | <i>Orthilia secunda</i> | 2-2.5-3 | 67 | 12.9 |
| GORE2 | <i>Goodyera repens</i> | 4-4-4 | 33 | 11.5 |
| STLO2 | <i>Stellaria longipes</i> | 3-3-3 | 33 | 10.0 |
| PYAS | <i>Pyrola asarifolia</i> | 3-3-3 | 33 | 10.0 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQPR | <i>Equisetum pratense</i> | 3-9-15 | 67 | 24.5 |
| GELI2 | <i>Geocaulon lividum</i> | 1-5.5-10 | 67 | 19.1 |
| MEPA | <i>Mertensia paniculata</i> | 10-10-10 | 33 | 18.3 |
| COCA13 | <i>Cornus canadensis</i> | 6-6-6 | 33 | 14.1 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 4-4-4 | 33 | 11.5 |
| DEGL3 | <i>Delphinium glaucum</i> | 3-3-3 | 33 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| LIBO3 | <i>Linnaea borealis</i> | 3-9.3-20 | 100 | 30.6 |
| ARRU | <i>Arctostaphylos rubra</i> | 2-4-7 | 100 | 20.0 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 8-8-8 | 33 | 16.3 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| RITR | <i>Ribes triste</i> | 10-10-10 | 33 | 18.3 |
| LEGR | <i>Ledum groenlandicum</i> | 7-7-7 | 33 | 15.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-5-5 | 33 | 12.9 |
| VIDE | <i>Viburnum edule</i> | 1-2-3 | 67 | 11.5 |
| ROAC | <i>Rosa acicularis</i> | 1-2-3 | 67 | 11.5 |
| RIBES | <i>Ribes</i> | 3-3-3 | 33 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| SHCA | <i>Shepherdia canadensis</i> | 15-15-15 | 33 | 22.4 |
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 33 | 12.9 |
| SAAR3 | <i>Salix arbusculoides</i> | 5-5-5 | 33 | 12.9 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 15-17.5-20 | 67 | 34.2 |
| ALNUS | <i>Alnus</i> | 18-18-18 | 33 | 24.5 |
| SAALA | <i>Salix alaxensis var. alaxensis</i> | 15-15-15 | 33 | 22.4 |
| SABE2 | <i>Salix bebbiana</i> | 15-15-15 | 33 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 2-3.5-5 | 67 | 15.3 |
| BENE4 | <i>Betula neoalaskana</i> | 4-4-4 | 33 | 11.5 |

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Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-9-15 | 100 | 30.0 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 33 | 12.9 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 25-31.7-40 | 100 | 56.3 |
| BENE4 | <i>Betula neoalaskana</i> | 6-6-6 | 33 | 14.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 89-143-271 | 7.2-10-12.5 | 46-63-78 | 8 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 73-99.5-142 | 3 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Other woody plants | Other | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—22-28.7-35

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana/Betula glandulosa*

Ecological Classification ID: F231XY124AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Hills, mountains, nonsorted circles on hills, turf hummocks on hills

Slope (percent): Min Max
5 70

Elevation (feet): Min Max
2,461 4,265

Range of Aspect Direction: South to northeast (clockwise)

Water Table Depth (cm): None recorded

Flooding: Frequency Duration
None None

Ponding: Frequency Duration
None None

Runoff: Medium

Frost-Free Days: Min Max
50 80

Mean Annual Precipitation (inches): Low High
11 32

Mean Annual Air Temperature (°F): Low High
19 28

Monthly Data:

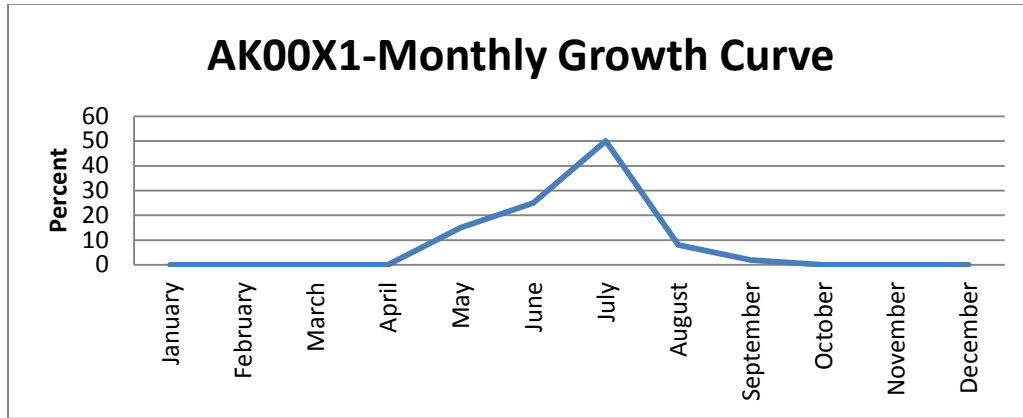
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31UC2—D31-Subalpine woodland rocky colluvial slopes, cold

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive Typic Haplocryepts

Dominant Parent Material: Organic material over gravelly colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
7 11 14

pH: Low RV High
3.4 5.5 6.9

Effective CEC (me/100g): Low High
11.1 33.9

CEC (me/100g): Min RV Max
4.9 24.4 62


Organic Matter (percent): Low RV High
2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
0.2 1 1.39

Plant Community Phases

| | | | |
|--|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY124AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This subalpine ecological site is at high elevations, generally on convex backslopes of mountains (>5% slopes; 850 to 1,150 meters elevation). Cryoturbation resulted in patterned ground features known as circles. The soils in community phase 1.1 are classified as Haplocrypts and are composed of organic matter over gravelly cryoturbate. There is no obvious rock sorting. Rocks typically are on the soil surface, but they are not abundant. White spruce is present, but the cover in the climax phase generally is sparse due mainly to the cold microclimate. This site is on landscape positions similar to those of site R231XY129AK, but the soils associated with this site have a higher content of rock fragments and do not have permafrost.</p> <p>Fire is a documented disturbance regime that resulted in three observed phases. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. For this ecological site, high-severity fire events are believed to be more typical than low-severity fire events. Low-severity and high-severity fire events appear to cause differences in the thickness of the organic material on the soil surface and the present and potential vegetation.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div>Subalpine woodland gravelly circles</div><div>F231XY124AK</div><div><div><div>1.1 (HCPC) White spruce-shrub birch-lichen-feathermoss woodland</div><div>1.2 (2FL) Scrub birch-mixed scrub-lichen scrubland</div><div>1.3 (2FE) Scrub birch-mixed grass-mixed forb scrubland</div></div><div><div>1.1b</div><div>1.2b</div><div>1.1a</div><div>1.2a</div><div>1.3a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |

| | |
|------------------|--|
| State Narrative: | <p>For the climax phase, the dominant vegetation is a mixture of shrubs in the medium, low, and dwarf strata. The tree cover is sporadic, and it is evenly distributed among the tall, medium, stunted, and regenerative tree strata. The sites are considered woodland (10-25% tree cover). The phases were grouped primarily on the basis of the general height and age of the trees, which are believed to indicate the time since the last fire event.</p> <p>Fire has completely removed the tree canopy. Because the early-phase vegetation is a mixture of broadleaf tree regeneration and herbaceous plants, the disturbance was likely a high-severity fire event. This high-severity fire likely consumed much of the organic mat, exposing the mineral soil. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>In interior Alaska, the dominant subalpine tree species is <i>Picea glauca</i>. <i>Picea glauca</i> establishes after fire from offsite seed sources; therefore, the fire return interval likely greatly affects the abundance of white spruce cover at any given location. Shorter fire return intervals likely result in less long-term coniferous tree cover than do longer fire return intervals.</p> <p>The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches. The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet.</p> |
|------------------|--|

| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-shrub birch-lichen-feathermoss woodland |

| Community Phase Narrative: | |
|--|---|
| <p>The tree canopy is evenly distributed among stunted, regenerative, medium, and tall trees. The site is considered woodland. <i>Picea glauca</i> is the most common tree species, but <i>Picea mariana</i> is also present. For this phase, <i>Picea glauca</i> averages 70 years of age (28 to 123 years). This phase has abundant shrub cover, most of which is in the low and dwarf strata. The most common medium shrub is <i>Betula glandulosa</i>, the most common low shrubs are <i>Betula glandulosa</i> and <i>Vaccinium uliginosum</i>, and the most common dwarf shrub is <i>Empetrum nigrum</i>. Graminoids and forbs are minor vegetative components. Lichen and moss are evenly distributed across the site (combined >50% ground cover). The diversity of the lichen is high, but no individual species is dominant. The most common moss species are <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i>.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | High-severity fire. |
| 1.1b | Low-severity or spot fires. Fire removes the majority of the spruce cover, but shrubs quickly regenerate post-fire. |

| | |
|-----------|---|
| Phase 1.2 |  |
|-----------|---|

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| | | | |
|---|---|-----------------------|--|
| Community Phase Number: | 1.2 | Community Phase Name: | Scrub birch-mixed scrub-lichen scrubland |
| Community Phase Narrative: | | | |
| <p>Because most of the other vegetative components in the late and climax phases are similar, the tree canopy is the major distinguishing factor. The tree canopy consists dominantly of stunted and regenerative trees, and the site typically does not have enough cover to be considered woodland (<10% tree cover). <i>Picea glauca</i> is the most common tree species, but <i>Picea mariana</i> and <i>Betula neoalaskana</i> are also present. For this phase, <i>Picea glauca</i> averages 54 years of age (19 to 117 years), and the diameter at breast height averages 3.8 inches. The most common medium and low shrub is <i>Betula glandulosa</i>, and the most common dwarf shrubs are <i>Empetrum nigrum</i>, <i>Vaccinium vitis-idaea</i>, and <i>Ledum palustre</i>. Graminoids and forbs are minor vegetative components. The diversity of the lichen is high. Common lichen include various <i>Cladina</i> sp. and <i>Masonhalea richardsonii</i>.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Fire. | | |
| 1.2b | Normal time and growth without fire disturbance. White spruce matures into woodland. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.3. | | |

| | |
|-----------|--|
| Phase 1.3 |  |
|-----------|--|

| | | | |
|---|---|-----------------------|--|
| Community Phase Number: | 1.3 | Community Phase Name: | Scrub birch-mixed grass-mixed forb scrubland |
| Community Phase Narrative: | | | |
| All of the tree canopy is in the regenerative tree stratum, and it consists primarily of <i>Populus tremuloides</i> . As compared to the climax and late phase vegetation, the abundance of shrubs and lichen is substantially lower. The most common shrub is <i>Betula glandulosa</i> . Unlike in the late and climax phases, graminoids and forbs are major vegetative components. The most common graminoids are <i>Festuca altaica</i> and <i>Calamagrostis canadensis</i> , and the most common forb is <i>Chamerion angustifolium</i> . Two observations of this phase were conducted. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Normal time and growth without disturbance. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min Avg Max
 60 68 76

Restrictive Features: None recorded

Drainage Class: Somewhat excessively drained

Surface Layer

Thickness (cm): Min Avg Max
 0 0 0

Texture: Silt loam

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AWC (cm/cm): Min Avg Max
0.24 0.24 0.25

pH: Min Avg Max
6.4 6.8 7.11

Subsurface Layer

Thickness (cm): Min Avg Max
60 68 76

Texture: Gravelly silt loam, very cobbly silt loam, extremely cobbly silt loam, very gravelly very fine sandy loam

AWC (cm/cm): Min Avg Max
0.12 0.2 0.24

pH: Min Avg Max
6.5 7.1 7.8

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 1-2 | 10-55 | 10-90 | 4-15 | 1-5 | 1-15 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 40-40 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-2 | --- | --- |
| FM (4-24 inches) | --- | 0.01-5 | --- | --- |
| SD (<8 inches) | --- | --- | 1-5 | --- |
| SL (8-36 inches) | --- | --- | 0.01-5 | --- |
| SM (3-10 feet) | --- | --- | 1-3 | --- |
| TR (<15 feet) | --- | --- | --- | 2-25 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|------------------------------|------------------|-------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 40-40-40 | 50 | 44.7 |
| CAPU | <i>Calamagrostis purpurascens</i> | 3-3-3 | 50 | 12.2 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|------------------------------|------------------|-------------------------|
| FEAL | <i>Festuca altaica</i> | 40-40-40 | 50 | 44.7 |

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Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------|---------------------------------|------------------|----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 2-2-2 | 50 | 10.0 |
| SATR5 | <i>Saxifraga tricuspidata</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------------|---------------------------------|------------------|----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 2-11-20 | 100 | 33.2 |
| GEPR3 | <i>Gentiana prostrata</i> | 5-5-5 | 50 | 15.8 |
| EQAR | <i>Equisetum arvense</i> | 5-5-5 | 50 | 15.8 |
| ACMI2 | <i>Achillea millefolium</i> | 3-3-3 | 50 | 12.2 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 0-1-2 | 100 | 10.0 |
| GABO2 | <i>Galium boreale</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------|---------------------------------|------------------|----------------------------|
| ARUV | <i>Arctostaphylos uva-ursi</i> | 5-5-5 | 50 | 15.8 |
| LIBO3 | <i>Linnaea borealis</i> | 2-2-2 | 50 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| B EGL | <i>Betula glandulosa</i> | 5-5-5 | 50 | 15.8 |
| BEOC2 | <i>Betula occidentalis</i> | 3-3-3 | 50 | 12.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| B EGL | <i>Betula glandulosa</i> | 25-25-25 | 50 | 35.4 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 1-2.5-4 | 100 | 15.8 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 3-3-3 | 50 | 12.2 |
| SAGL | <i>Salix glauca</i> | 3-3-3 | 50 | 12.2 |
| ROAC | <i>Rosa acicularis</i> | 2-2-2 | 50 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 2-13.5-25 | 100 | 36.7 |
| POBA2 | <i>Populus balsamifera</i> | 2-2-2 | 50 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—19-24-29

Community Phase 2FL



Rooting Depth (cm): Min RV Max
 19 54.2 81

Restrictive Features: None recorded

Drainage Class: Somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
 0 3.2 8

Texture: Channery silt loam, highly decomposed plant material, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.21 0.32 0.4

pH: Min RV Max
 3.2 4.2 4.9

Subsurface Layer

Thickness (cm): Min RV Max
 19 51 73

Texture: Extremely bouldery very fine sandy loam, cobbly loam, very cobbly coarse sandy loam, very cobbly sandy loam, very channery sandy loam, extremely channery coarse sand, extremely channery very fine sandy loam, very stony coarse sandy loam, very flaggy fine sandy loam, extremely flaggy fine sandy loam, extremely stony sandy loam

AWC (cm/cm): Min RV Max
 0.03 0.12 0.24

pH: Min RV Max
 5 5.6 6.3

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 12-90 | 5-40 | 3-40 | 0-10 | 0-5 | 0-25 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-3 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-2 | --- | --- |
| FM (4-24 inches) | --- | 0.1-0.1 | --- | --- |
| SD (<8 inches) | --- | --- | 10-5 | --- |
| SL (8-36 inches) | --- | --- | 0.1-25 | --- |
| TR (<15 feet) | --- | --- | --- | 1-1 |
| TS (<15 feet) | --- | --- | --- | 5-5 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| FEAL | <i>Festuca altaica</i> | 1-10.3-15 | 38 | 19.7 |
| CAREX | <i>Carex</i> | 5-7.5-10 | 25 | 13.7 |
| CABI5 | <i>Carex bigelowii</i> | 1-3.5-7 | 50 | 13.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 7-7-7 | 13 | 9.4 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-10.9-50 | 100 | 33.0 |
| EMNI | <i>Empetrum nigrum</i> | 5-10.1-15 | 100 | 31.8 |
| LEGR | <i>Ledum groenlandicum</i> | 80-80-80 | 13 | 31.6 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 1-10.8-30 | 75 | 28.5 |
| LOPR | <i>Loiseleuria procumbens</i> | 2-6.7-12 | 75 | 22.4 |
| DROC | <i>Dryas octopetala</i> | 0-6.2-15 | 75 | 21.5 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 3-9-15 | 25 | 15.0 |
| ARRU | <i>Arctostaphylos rubra</i> | 10-10-10 | 13 | 11.2 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 5-23.8-40 | 50 | 34.5 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-5.1-10 | 88 | 21.2 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 0.1-4.7-12 | 38 | 13.3 |
| BEOC2 | <i>Betula occidentalis</i> | 2-4.5-7 | 25 | 10.6 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 5-30-50 | 38 | 33.5 |
| SARI4 | <i>Salix richardsonii</i> | 10-10-10 | 13 | 11.2 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| BEOC2 | <i>Betula occidentalis</i> | 10-10-10 | 13 | 11.2 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 7-7-7 | 13 | 9.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-3.2-5 | 63 | 14.1 |
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 13 | 11.2 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 4-6.2-10 | 75 | 21.5 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-6.5-8 | 25 | 12.7 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 19-58-117 | 1.1-4-9 | 6-17-37 | 13 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 4-47-90 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Caribou | Spring |
| Slight use | Grasses and sedges | Dall sheep | Unknown |
| Slight use | Other woody plants | Caribou | Unknown |
| Slight use | Willows | Moose | Spring |

Notable Plants: None observed

Species Richness: Number of stops—8; plant species per stop (min-avg-max)—22-27.5-35

Community Phase HCPC



Rooting Depth (cm): Min RV Max
46 76.5 93

Restrictive Features: None recorded

Drainage Class: Somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
0 8.8 14

Texture: Highly decomposed plant material, silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.25 0.34 0.4

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pH: Min RV Max
3.7 4.6 5.7

Subsurface Layer

Thickness (cm): Min RV Max
46 67.8 79

Texture: Extremely cobbly coarse sandy loam, very gravelly sandy loam, extremely gravelly coarse sand, silt loam

AWC (cm/cm): Min RV Max
0.02 0.11 0.24

pH: Min RV Max
4.4 5.9 6.9

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 25-45 | 3-50 | 5-37 | 0-10 | 0-5 | 0-20 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-2 | --- | --- | --- |
| GT (>24 inches) | 7-7 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 1-7 | --- | --- |
| SD (<8 inches) | --- | --- | 10-3 | --- |
| SL (8-36 inches) | --- | --- | 10-15 | --- |
| SM (3-10 feet) | --- | --- | 10-20 | --- |
| ST (>10 feet) | --- | --- | 15-15 | --- |
| TR (<15 feet) | --- | --- | --- | 2-2 |
| TM (15-40 feet) | --- | --- | --- | 10-10 |
| TT (>40 feet) | --- | --- | --- | 10-10 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|------------------------------|------------------|-------------------------|
| CAREX | <i>Carex</i> | 2-3.5-5 | 33 | 10.8 |
| CACA11 | <i>Carex canescens</i> | 5-5-5 | 17 | 9.1 |

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Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| FEAL | <i>Festuca altaica</i> | 7-7-7 | 17 | 10.8 |
| CACA4 | <i>Calamagrostis canadensis</i> | 7-7-7 | 17 | 10.8 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 7-7-7 | 17 | 10.8 |
| POBO2 | <i>Polemonium boreale</i> | 5-5-5 | 17 | 9.1 |
| SOMU | <i>Solidago multiradiata</i> | 5-5-5 | 17 | 9.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 5-20-35 | 83 | 40.8 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-6.2-10 | 67 | 20.4 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 2-7.3-15 | 50 | 19.1 |
| DROC | <i>Dryas octopetala</i> | 2-7.3-15 | 50 | 19.1 |
| ARRU | <i>Arctostaphylos rubra</i> | 10-10-10 | 17 | 12.9 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-5-5 | 17 | 9.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 15-23.8-35 | 67 | 39.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-11-20 | 83 | 30.3 |
| ROAC | <i>Rosa acicularis</i> | 0-5.7-10 | 50 | 16.8 |
| LEGR | <i>Ledum groenlandicum</i> | 15-15-15 | 17 | 15.8 |
| SAPU15 | <i>Salix pulchra</i> | 15-15-15 | 17 | 15.8 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-7.5-10 | 33 | 15.8 |
| EMNI | <i>Empetrum nigrum</i> | 10-10-10 | 17 | 12.9 |
| SALIX | <i>Salix</i> | 1-3-5 | 33 | 10.0 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 1-3-5 | 33 | 10.0 |
| SAGL | <i>Salix glauca</i> | 0-2.5-5 | 33 | 9.1 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 5-5-5 | 17 | 9.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 15-17.5-20 | 33 | 24.2 |
| SAPU15 | <i>Salix pulchra</i> | 5-7.5-10 | 33 | 15.8 |
| SARI4 | <i>Salix richardsonii</i> | 10-10-10 | 17 | 12.9 |
| SAGL | <i>Salix glauca</i> | 5-5-5 | 17 | 9.1 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| BEOC2 | <i>Betula occidentalis</i> | 15-15-15 | 17 | 15.8 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-1.7-2 | 50 | 9.1 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 17 | 9.1 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 3-4.3-5 | 50 | 14.7 |
| PIMA | <i>Picea mariana</i> | 10-10-10 | 17 | 12.9 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-10-15 | 67 | 25.8 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 10-10-10 | 33 | 18.3 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 28-70-123 | 2.4-6-12.1 | 12-30-65 | 10 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 1-10-23 | 4 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Caribou | Spring |
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Caribou | Unknown |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Summer |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—25-30-35

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Populus balsamifera*/*Salix alaxensis*/*Calamagrostis canadensis*

Ecological Classification ID: F231XY130AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Drainageways on hills, low flood plains

Slope (percent): Min Max

1 5

Elevation (feet): Min Max

656 2,657

Range of Aspect Direction: All aspects

Water Table Depth (cm): None recorded

Flooding: Frequency Duration

Frequent Brief

Ponding: Frequency Duration

None None

Runoff: Low

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

10 28

Mean Annual Air Temperature (°F): Low High

23 28

Monthly Data:

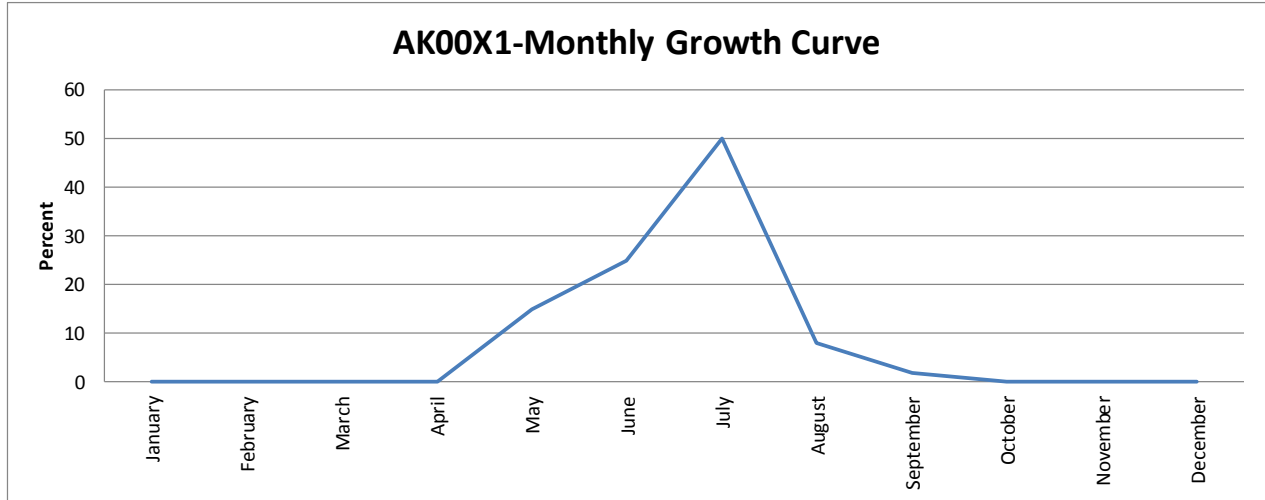
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH5—D31-Boreal woodland rocky low flood plains
 D31HL1—D31-Boreal woodland rocky low flood plains
 D31UC1—D31-Boreal woodland rocky low flood plains
 D31UC4—D31-Boreal woodland rocky low flood plains

Characteristics of Representative Soil Components

Soil Classification: Sandy or sandy-skeletal, mixed Typic Cryorthents

Dominant Parent Material: Sandy and gravelly alluvium

Representative Surface Texture: Very cobbly coarse sandy loam

Subsurface Texture Group: Sandy or sandy-skeletal

Saturated Hydraulic Conductivity: High

AWC Total (cm): Low RV High
 3 5 6

pH: Low RV High
 5.9 7.2 8

Effective CEC (me/100g): Low High
 4 4

CEC (me/100g): Min RV Max
 1.9 2.3 2.7


Organic Matter (percent): Low RV High
 0.9 0.9 0.9


Bulk Density (1/3-Bar): Min RV Max


1.38 1.5 1.59

Plant Community Phases

| | | | |
|---|--|-------------|-----------|
| Ecological Site Description ID: | F231XY130AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is associated with all river systems that are subject to frequent flood events, with the exception of the Yukon River. Soils are classified as Cryorthents and are composed of sandy and/or loamy alluvium over gravelly alluvium. The duration of the periods of flooding is short enough to allow vegetation to grow on bars, but the intensity of the flooding hinders growth of trees. This site commonly supports woodland with stands of alder and willow. As the site progresses from phase 1.3 to 1.1, less soil is exposed and surface plant litter increases. These changes likely coincide with increases in vegetative cover. Ice damming disturbance was not observed on this ecological site. Flooding is a disturbance regime on this ecological site that results in three unique phases. If the flood regime shifts to favor the growth of white spruce, the area transitions to ecological site F231XY131AK.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div><div>1.0 Reference State</div><div>Boreal woodland gravelly floodplain</div><div>F231XY130AK</div></div><div><div><div>1.1 (HCPC) Cottonwood-white spruce-alder-feltleaf willow-mixed herbaceous-moss woodland</div><div>1.2 b</div><div>1.2 (2AM) Mixed willow-alder-shrubby cinquefoil-mixed herbaceous scrubland</div><div>1.2 a</div><div>1.3 (2AE) Mixed willow-mixed herbaceous community</div><div>1.3 a</div><div>1.1 a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state were grouped based on the structure and dominance of tree and shrub species, which are believed to be directly related to the duration and intensity of flooding of the river systems.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to</p> | | |

| | | | |
|--|--|-----------------------|--|
| | 3 feet, and dwarf shrubs as less than 8 inches. | | |
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Cottonwood-white spruce-alder-feltleaf willow-mixed herbaceous-moss woodland |
| Community Phase Narrative: | | | |
| <p>Community phase 1.1 has a taller and denser tree and shrub cover than does community phase 1.2. The tree cover is evenly distributed between the medium and regenerative strata (total mature tree cover ~15%). <i>Populus balsamifera</i> is dominant in the medium tree stratum, and <i>Picea glauca</i> is dominant in the regenerative tree stratum. The majority of the shrub cover is in the tall and medium strata (total shrub cover ~50%). Common shrub species include <i>Salix alaxensis</i>, <i>Alnus incana</i> spp. <i>tenuifolia</i>, and <i>Rosa acicularis</i>. Common graminoids and forbs include <i>Hedysarum alpinum</i>, <i>Artemisia tilesii</i>, and <i>Calamagrostis canadensis</i>. Moss makes up a significant ground cover (~25%), and the most common species is <i>Hylocomium splendens</i>. Six observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Increased flood frequency, duration, and/or flood intensity shift the community from dominantly tall shrubs with a closed canopy to a sparsely vegetated herbaceous community. | | |

| | | | |
|---|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Alder-mixed willow-shrubby cinquefoil-mixed herbaceous scrubland |
| Community Phase Narrative: | | | |
| <p>Community phase 1.2 has a taller and denser shrub cover than does community phase 1.3. Seedlings of <i>Picea glauca</i> and <i>Populus balsamifera</i> are a minor vegetative component. Medium and low shrubs are the dominant cover (total shrub cover ~50%). Common species include <i>Alnus incana</i> ssp. <i>tenuifolia</i> and <i>Salix alaxensis</i>. Graminoids and forbs are common, but they occur at low densities (~20% cover). Common species are <i>Hedysarum alpinum</i>, <i>Artemisia tilesii</i>, <i>Carex lasiocarpa</i>, <i>Calamagrostis canadensis</i>, and <i>Chamerion latifolium</i>. Five observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Increased flood frequency, duration, and intensity shift the community from dominantly medium and tall shrubs with an open canopy to a sparsely vegetated herbaceous community. | | |
| 1.2b | Normal time and growth. Flood disturbance is less frequent, and the community shifts from an open shrub community to a closed shrub community. | | |

| | | | |
|--|--|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Mixed willow-mixed herbaceous community |
| Community Phase Narrative: | | | |
| <p>This phase is characterized by sparse trees, shrubs, graminoids, and forbs. Seedlings of <i>Picea glauca</i>, <i>Betula neoalaskana</i>, and <i>Populus balsamifera</i> are a minor vegetative component. Low shrubs are dominant (total shrub cover ~10%). Common species include <i>Salix pseudomonticola</i> and <i>Salix alaxensis</i>. Graminoids and forbs are common, but they occur at low densities (~15% cover). Common species are <i>Hedysarum alpinum</i>, <i>Eurybia sibirica</i>, <i>Wilhelmsia physodes</i>, and <i>Artemisia tilesii</i>. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | <p>Normal time and growth. Flood disturbance is less frequent, and the community shifts from a sparse forb community to an open shrub community.</p> | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2AE



Rooting Depth (cm): Min RV Max
 44 50.7 56

Restrictive Features: None recorded

Drainage Class: Moderately well drained

Surface Layer

Thickness (cm): Min RV Max
 0 0 0

Texture: Gravelly loamy coarse sand, very cobbly sandy loam, very gravelly loamy coarse sand

AWC (cm/cm): Min RV Max
 0.02 0.05 0.07

pH: Min RV Max
 6.3 7.1 7.7

Subsurface Layer

Thickness (cm): Min RV Max
 44 50.7 56

Texture: Extremely cobbly coarse sand, extremely channery loamy coarse sand

AWC (cm/cm): Min RV Max
 0.03 0.04 0.06

pH: Min RV Max
 7.8 7.9 8

Influencing Water FeaturesNWI Code: R2UB1, R2US1NWI Description: Riverine, Lower Perennial, Unconsolidated Bottom, Cobble Gravel; Riverine, Lower Perennial, Unconsolidated Shore, Cobble GravelRosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point bars; steep, entrenched, cascading step-poolsStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 0-8 | 3-10 | 1-15 | 3-40 | 45-93 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 0.01-3 | --- | --- |
| FM (4-24 inches) | --- | 0.01-1 | --- | --- |
| SL (8-36 inches) | --- | --- | 0.01-5 | --- |
| TR (<15 feet) | --- | --- | --- | 0.01-0.01 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| POA | <i>Poa</i> | 15-15-15 | 33 | 22.4 |
| DECA18 | <i>Deschampsia caespitosa</i> | 5-5-5 | 33 | 12.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| ELMA7 | <i>Elymus macrourus</i> | 10-10-10 | 33 | 18.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 3-3-3 | 33 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| HEAL | <i>Hedysarum alpinum</i> | 2-2-2 | 67 | 11.5 |
| ARTI | <i>Artemisia tilesii</i> | 1-1.5-2 | 67 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| SAPS | <i>Salix pseudomonticola</i> | 20-20-20 | 33 | 25.8 |
| SAAL | <i>Salix alaxensis</i> | 5-5-5 | 67 | 18.3 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 5-7.5-10 | 67 | 22.4 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|--------------|--------------------------|---------------------------|---------------|
| Moderate use | Willows | Moose | Unknown |
| Slight use | | Moose | Winter |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—10-12.7-16

Community Phase 2AM



Rooting Depth (cm): Min RV Max
4 42.6 71

Restrictive Feature: Permafrost

Drainage Class: Moderately well drained

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Surface Layer

Thickness (cm): Min RV Max
0 4 17

Texture: Gravelly fine sand, peat

AWC (cm/cm): Min RV Max
0.03 0.18 0.35

pH: Min RV Max
3.7 6.6 7.7

Subsurface Layer

Thickness (cm): Min RV Max
4 38.6 54

Texture: Very cobbly coarse sand, very gravelly loamy sand, extremely cobbly coarse sand, extremely gravelly loamy coarse sand, highly organic silt loam, silt loam, peat

AWC (cm/cm): Min RV Max
0.03 0.09 0.35

pH: Min RV Max
4.2 6.2 7.7

Influencing Water Features

NWI Code: R2UB1, R3US1

NWI Description: Riverine, Lower Perennial, Unconsolidated Bottom, Cobble-Gravel; Riverine, Upper Perennial, Unconsolidated Shore, Cobble-Gravel.

Rosgen Classification: Moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools; low-gradient, meandering, alluvial riffle/pool channels with point bars; multiple channels, narrow and deep with expansive, vegetated floodplain and wetlands; low-gradient, meandering, riffle/pool stream with low W/D ratio and little deposition

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-1 | 2-35 | 10-35 | 2-10 | 5-80 | 10-65 | 0-10 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-8 | --- | --- | --- |
| GT (>24 inches) | 10-10 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-8 | --- | --- |
| SM (3-10 feet) | --- | --- | 10-25 | --- |
| TR (<15 feet) | --- | --- | --- | 1-1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CALA11 | <i>Carex lasiocarpa</i> | 1-8-15 | 40 | 17.9 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 10-10-10 | 20 | 14.1 |
| JUTE | <i>Juncus tenuis</i> | 10-10-10 | 20 | 14.1 |
| DECA18 | <i>Deschampsia caespitosa</i> | 8-8-8 | 20 | 12.6 |
| CAAQ | <i>Carex aquatilis</i> | 5-5-5 | 20 | 10.0 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-2.5-4 | 40 | 10.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| ELMA7 | <i>Elymus macrourus</i> | 10-10-10 | 20 | 14.1 |
| AGROS2 | <i>Agrostis</i> | 5-5-5 | 20 | 10.0 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 10-10-10 | 20 | 14.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| HEAL | <i>Hedysarum alpinum</i> | 0-3.3-8 | 60 | 14.1 |
| EQAR | <i>Equisetum arvense</i> | 10-10-10 | 20 | 14.1 |
| ARTI | <i>Artemisia tilesii</i> | 0.1-2.6-5 | 40 | 10.1 |
| EUS13 | <i>Eurybia sibirica</i> | 2-2.5-3 | 40 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 20-20-20 | 20 | 20.0 |
| VAUL | <i>Vaccinium uliginosum</i> | 15-15-15 | 20 | 17.3 |
| B EGL | <i>Betula glandulosa</i> | 5-5-5 | 20 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| SAALL | <i>Salix alaxensis var. longistylis</i> | 15-20-25 | 40 | 28.3 |
| SAAL | <i>Salix alaxensis</i> | 3-14-25 | 40 | 23.7 |
| SAALA | <i>Salix alaxensis var. alaxensis</i> | 10-12.5-15 | 40 | 22.4 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 5-10-15 | 40 | 20.0 |
| SAPU15 | <i>Salix pulchra</i> | 15-15-15 | 20 | 17.3 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 15-15-15 | 20 | 17.3 |
| SABE2 | <i>Salix bebbiana</i> | 12-12-12 | 20 | 15.5 |
| SAAR3 | <i>Salix arbusculoides</i> | 10-10-10 | 20 | 14.1 |
| SAPS | <i>Salix pseudomonticola</i> | 5-5-5 | 20 | 10.0 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 1-12-30 | 60 | 26.8 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Summer |
| Slight use | Willows | Moose | Unknown |

Notable Plants: *Juncus tenuis*

Species Richness: Number of stops—5; plant species per stop (min-avg-max)—12-15-18

Community Phase HCPC



Rooting Depth (cm) : Min RV Max
39 56.3 74

Restrictive Features: None recorded

Drainage Class: Moderately well drained

Surface Layer

Thickness (cm): Min RV Max
0 0.7 4

Texture: Fine sandy loam, loamy sand, sandy loam, silt loam

AWC (cm/cm): Min RV Max
0.08 0.2 0.35

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pH: Min RV Max
5.7 6.8 7.7

Subsurface Layer

Thickness (cm): Min RV Max
39 55.7 70

Texture: Very gravelly coarse sand, very gravelly loamy sand, extremely cobbly coarse sand, loamy sand, extremely stony loamy sand, very fine sandy loam

AWC (cm/cm): Min RV Max
0.02 0.06 0.25

pH: Min RV Max
6.1 7 7.6

Influencing Water Features

NWI Code: PSS1, R2UB1

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; Riverine, Lower Perennial, Unconsolidated Bottom, Cobble-Gravel

Rosgen Classification: Moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools; low-gradient, meandering, alluvial riffle/pool channels with point bars

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-4 | 3-75 | 15-50 | 1-15 | 0-65 | 0-30 | 0-5 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-1 | --- | --- | --- |
| GT (>24 inches) | 70-70 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-15 | --- | --- |
| SL (8-36 inches) | --- | --- | 0.1-5 | --- |
| SM (3-10 feet) | --- | --- | 5-5 | --- |
| ST (>10 feet) | --- | --- | 45-45 | --- |
| TR (<15 feet) | --- | --- | --- | 2-2 |
| TM (15-40 feet) | --- | --- | --- | 2-5 |
| TT (>40 feet) | --- | --- | --- | 15-15 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| POA | <i>Poa</i> | 1-8-15 | 33 | 16.3 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-2.7-4 | 50 | 11.5 |
| POPA2 | <i>Poa palustris</i> | 5-5-5 | 17 | 9.1 |
| BRINP5 | <i>Bromus inermis</i> ssp. <i>pumpellianus</i> var. <i>pumpellianus</i> | 5-5-5 | 17 | 9.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-42.5-70 | 33 | 37.6 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| EQPA | <i>Equisetum palustre</i> | 15-15-15 | 17 | 15.8 |
| COPA28 | <i>Comarum palustre</i> | 1-5.5-10 | 33 | 13.5 |
| HEAL | <i>Hedysarum alpinum</i> | 0-2.5-7 | 67 | 12.9 |
| ARTI | <i>Artemisia tilesii</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| RUARA2 | <i>Rubus arcticus</i> ssp. <i>acaulis</i> | 15-15-15 | 17 | 15.8 |
| ARRU | <i>Arctostaphylos rubra</i> | 5-5-5 | 17 | 9.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 2-3-5 | 67 | 14.1 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-5-5 | 17 | 9.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| SAAL | <i>Salix alaxensis</i> | 20-35-50 | 33 | 34.2 |
| ALINT | <i>Alnus incana</i> ssp. <i>tenuifolia</i> | 5-6.2-10 | 67 | 20.4 |
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 2-8.5-15 | 33 | 16.8 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| SAAL | <i>Salix alaxensis</i> | 45-45-45 | 17 | 27.4 |
| SAALL | <i>Salix alaxensis</i> var. <i>longistylis</i> | 40-40-40 | 17 | 25.8 |
| SAPS | <i>Salix pseudomonticola</i> | 35-35-35 | 17 | 24.2 |
| SAALA | <i>Salix alaxensis</i> var. <i>alaxensis</i> | 35-35-35 | 17 | 24.2 |
| ALINT | <i>Alnus incana</i> ssp. <i>tenuifolia</i> | 10-10-10 | 17 | 12.9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-8.8-25 | 100 | 29.7 |
| POBA2 | <i>Populus balsamifera</i> | 3-5.8-10 | 67 | 19.6 |
| BENE4 | <i>Betula neoalaskana</i> | 0.1-1.5-2 | 67 | 10.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 1-15.8-50 | 67 | 32.4 |
| PIGL | <i>Picea glauca</i> | 10-10-10 | 17 | 12.9 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 17 | 9.1 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 1-8-15 | 33 | 16.3 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 40-51-57 | 1.1-1-1.4 | 9-10-12 | 3 | B |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Moose | Winter |
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—17-20.5-24

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca/Rosa acicularis/Lupinus arcticus*

Ecological Classification ID: F231XY131AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Drainageways on hills, high flood plains, low flood plains

Slope (percent): Min Max
 1 12

Elevation (feet): Min Max
 656 2,625

Range of Aspect Direction: All aspects

Water Table Depth (cm): None recorded

Flooding: Frequency Duration
 None None

Ponding: Frequency Duration
 Rare Very brief

Runoff: Low

Frost-Free Days: Min Max
 50 80

Mean Annual Precipitation (inches): Low High
 10 28

Mean Annual Air Temperature (°F): Low High
 23 28

Monthly Data:

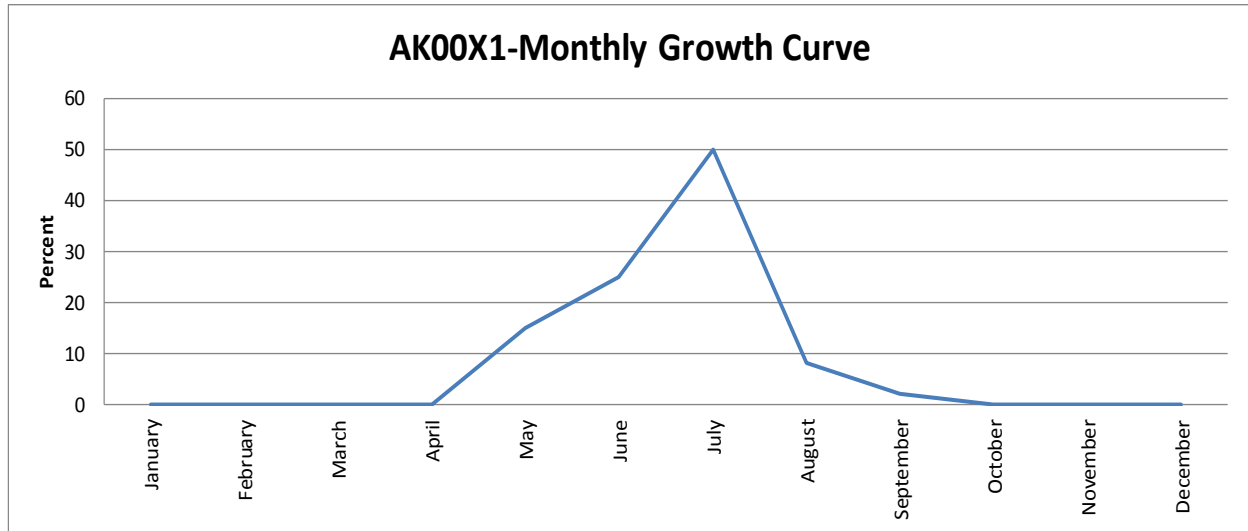
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH5—D31-Boreal forest loamy high flood plains

D31UC1—D31-Boreal forest loamy high flood plains

D31UC4—D31-Boreal forest loamy high flood plains

Characteristics of Representative Soil Components

Soil Classification: Sandy or sandy-skeletal, mixed Typic Cryorthents

Dominant Parent Material: Organic material over sandy and gravelly alluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Sandy or sandy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
6 12 17

pH: Low RV High
3.4 6.3 7.5

Effective CEC (me/100g): Low High
17.7 40

CEC (me/100g): Min RV Max
2.7 22.9 62

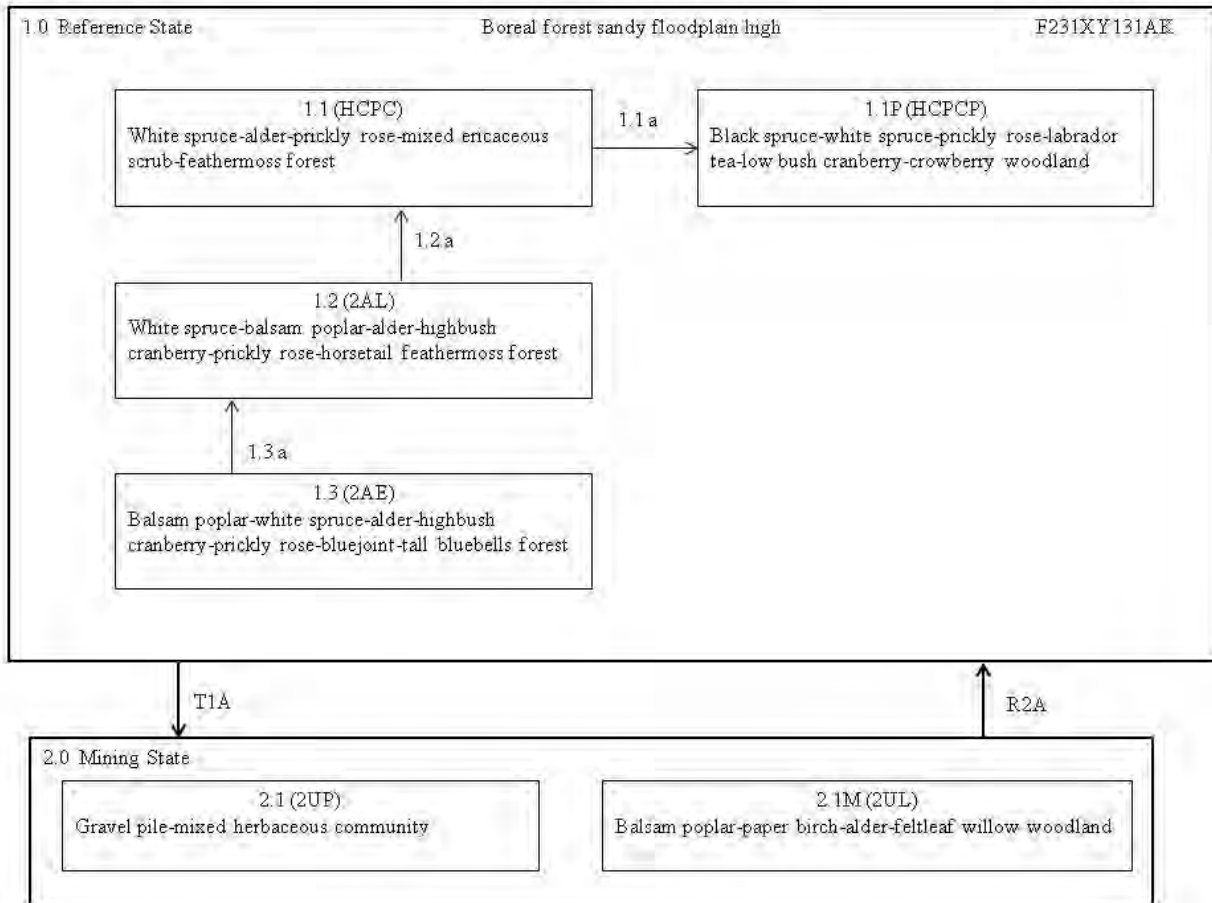
Organic Matter (percent): Low RV High
0.9 29 80

Bulk Density (1/3-Bar): Min RV Max
0.9 1.1 1.36

Plant Community Phases

| | |
|---|-------------|
| Ecological Site Description ID: | F231XY131AK |
| Ecological Dynamics of the Site: | |
| <p>This boreal ecological site is associated with all river systems that are subject to occasional to very rare flood events, with the exception of the Yukon River. Decreased intensity and frequency of flooding favors the replacement of tall scrubs with tree species, marking a successional progression from ecological site F231XY130AK (starting with community phase 1.3). As the site progresses from community phase 1.3 to 1.1, the surface organic matter content increases and tree composition shifts from dominantly deciduous to dominantly coniferous. In community phase 1.1, the soils are classified as Cryorthents and are composed of organic matter over sandy and gravelly alluvium.</p> <p>As flooding becomes very rare, this ecological site begins to shift toward that of a flood plain terrace site (e.g., F231XY169AK). Indicators of this shift are a decrease in the density and size of white spruce trees, an increase in abundance and density of ericaceous vegetation and black spruce trees, and a likely increase in fire disturbance. These sites are described as post-climax (i.e., community phase 1.1P).</p> <p>Mining occurs on this ecological site. It is believed that the degree of disturbance transitioned the reference state into two separate and unique community phases.</p> | |

State and Transition Diagram:



State and
Transition
Diagram:

1

State Name:


Reference


State Narrative:


If the intensity of flooding increases and the tree canopy is removed, this site transitions to ecological site F231XY130.


Fire is a disturbance regime believed to occur on the post-climax community phase. While unique community phases occur with a fire regime, limited sampling of post-climax plant communities was conducted. As a result, no fire-related plant community phases are recognized.


The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.


| | | | |
|---|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-alder-prickly rose-mixed ericaceous scrub-feathermoss forest |
| Community Phase Narrative: | | | |
| <p>The tree cover is mainly from the tall tree stratum (total mature tree cover ~50% and averages 152 years of age). <i>Picea glauca</i> is dominant, but a small number of <i>Betula neoalaskana</i> and <i>Populus balsamifera</i> are also present. Shrubs are evenly distributed among the tall, medium, low, and dwarf strata (~50% cover). Common species include <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Rosa acicularis</i>, <i>Vaccinium vitis-idaea</i>, and <i>Linnaea borealis</i>. The diversity of forbs and graminoids is high, with the ground cover totaling ~25%. Common species include <i>Geocaulon lividum</i>, <i>Calamagrostis canadensis</i>, <i>Lupinus arcticus</i>, and <i>Cornus canadensis</i>. Moss is an abundant ground cover (~80%), and the most common species are <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i>. Four observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | <p>Normal time and growth without flooding. White spruce forest declines in productivity, and the abundance and density of ericaceous plants and black spruce increase. The site begins the transition to a flood plain terrace site.</p> | | |

| | | | |
|--|--|-----------------------|---|
| Phase 1.1P |  | | |
| Community Phase Number: | 1.1P | Community Phase Name: | Black spruce-white spruce-prickly rose-Labrador tea-low bush cranberry-crowberry woodland |
| Community Phase Narrative: | | | |
| <p>Community phase 1.1P has a less dense white spruce canopy and lower basal area than does community phase 1.1. The tree canopy is evenly distributed between <i>Picea glauca</i> and <i>Picea mariana</i>, and <i>Betula neoalaskana</i> is codominant (~30% total mature tree cover). The tree cover is from the tall, medium, and stunted tree strata, and the average basal area is 43 (average basal area of community phase 1.1 is 142). Shrub cover totals ~50%, and common species are <i>Rosa acicularis</i>, <i>Ledum sp.</i>, <i>Vaccinium uliginosum</i>, <i>Empetrum nigrum</i>, and <i>Vaccinium vitis-idaea</i>. Forbs and graminoids are diverse but not abundant (~10% cover). <i>Hylocomium splendens</i> is the most abundant moss species (~20% cover), but <i>Sphagnum sp.</i> is also present. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| | No observed pathways. | | |

| | | | |
|---|--|-----------------------|---|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | White spruce-balsam poplar-alder-highbush cranberry-prickly rose-horsetail feathermoss forest |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i> is the dominant species in the tree canopy, but <i>Populus balsamifera</i> and <i>Betula neoalaskana</i> are also abundant. Deciduous trees commonly occur as standing dead trees or as a component of litter on the forest floor. The tree cover is mainly from the tall tree stratum (total mature tree cover ~60%, <i>Picea glauca</i> averages 59 years of age). Total shrub cover is approximately 20%, and common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Viburnum edule</i>, <i>Rosa acicularis</i>, and <i>Linnaea borealis</i>. Total forb cover is ~50%, and common species are <i>Equisetum arvense</i>, <i>Mertensia paniculata</i>, and <i>Geocaulon lividum</i>. Graminoids, lichen, and moss are minor vegetative components. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Normal time and growth. White spruce forest matures, and white spruce becomes dominant in the tree canopy. | | |

| | | | |
|--|--|--|--|
| Phase 1.3 | |  | |
| Community Phase Number: | 1.3 | Community Phase Name: | Balsam poplar-white spruce-alder-highbush cranberry-prickly rose-bluejoint-tall bluebells forest |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i>, <i>Populus balsamifera</i>, and <i>Betula neoalaskana</i> are the dominant species in the tree canopy. The tree cover is primarily from the medium tree stratum (total mature tree cover ~65% and <i>Picea glauca</i> averages 42 years of age). Shrub cover is ~60%, and the most abundant species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Salix bebbiana</i>, <i>Rosa acicularis</i>, and <i>Viburnum edule</i>. Graminoids and forbs make up ~40% cover, and the most abundant species are <i>Calamagrostis canadensis</i>, <i>Artemisia tilesii</i>, <i>Mertensia paniculata</i>, and <i>Pyrola grandiflora</i>. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Normal time and growth. White spruce begins to replace deciduous trees in the tree canopy. | | |

| | | | |
|---|-----------------------------|--|--|
| Phase 2.1 | |  | |
| Community Phase Number: | 2.1 | Community Phase Name: | Gravel pile-mixed herbaceous community |
| Community Phase Narrative: | | | |
| <p>This community is sparsely vegetated (<15% combined vegetative cover) and is comprised mostly of surface rock fragments. The most abundant species are <i>Populus balsamifera</i>, <i>Populus tremuloides</i>, <i>Betula neoalaskana</i>, <i>Salix alaxensis</i>, <i>Chamerion angustifolium</i>, and <i>Calamagrostis canadensis</i>. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| | No observed pathways. | | |

| | | | |
|--|--|-----------------------|--|
| Phase 2.1M |  | | |
| Community Phase Number: | 2.1M | Community Phase Name: | Balsam poplar-paper birch-alder-feltleaf willow woodland |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i>, <i>Betula neoalaskana</i>, and <i>Populus balsamifera</i> are primarily in the medium and regenerative tree strata (total mature tree cover ~25%). Shrubs are dominantly in the tall shrub stratum, and the most common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Alnus incana</i> ssp. <i>tenuifolia</i>, and <i>Salix alaxensis</i> (total shrub cover ~50%). Graminoids, forbs, lichen, and moss are minor vegetative components. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| | No observed pathways. | | |

Transition

| | |
|--|-----------------|
| Transition Number: | T1A |
| To State/Community Phase: | 2.1 and/or 2.1M |
| Transition Narrative: | |
| Community phases 2.1 and 2.1M are associated with mining activities. It appears that gravel was deposited in separate piles during mining and then loamy alluvium was deposited. Gravel piles are considered a unique plant community that might not ever support a typical flood plain community. As compared to gravel piles (community phase 2.1), loamy piles (community phase 2.1M) support a higher abundance of vegetation. | |

Restoration Pathway

| | |
|--|-----|
| Restoration Pathway Number: | R2A |
| To State/Community Phase: | 1.3 |
| Restoration Pathway Narrative: | |
| Community phase 2.1 likely is altered beyond restoration back to the reference state due to the xeric conditions. Community phase 2.1M resembles areas in many low flood plain positions (e.g., ecological site F231XY130AK). With normal time and growth, community phase 2.1M might support a white spruce-mixed deciduous forest. | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2AE



Rooting Depth (cm): Min RV Max
 62 62 62

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 4 4 4

Texture: Silt loam

AWC (cm/cm): Min RV Max
 0.25 0.25 0.25

pH: Min RV Max
 7.1 7.1 7.1

Subsurface Layer

Thickness (cm): Min RV Max
 58 58 58

Texture: Extremely cobbly coarse sand, extremely gravelly coarse sand

AWC (cm/cm): Min RV Max
 0.02 0.08 0.25

pH: Min RV Max
 7.2 7.5 7.8

Influencing Water FeaturesNWI Code None recordedNWI Description: None recordedRosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point barsStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-1 | 5-5 | 95-95 | 20-20 | 2-2 | 1-1 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-10 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-3 | --- | --- |
| FM (4-24 inches) | --- | 0.1-8 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-10 | --- |
| SL (8-36 inches) | --- | --- | 0.1-0.1 | --- |
| SM (3-10 feet) | --- | --- | 10-30 | --- |
| ST (>10 feet) | --- | --- | 10-5 | --- |
| TR (<15 feet) | --- | --- | --- | 2-5 |
| TM (15-40 feet) | --- | --- | --- | 15-50 |
| TT (>40 feet) | --- | --- | --- | 5-5 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 10-10-10 | 100 | 31.6 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| ORSE | <i>Orthilia secunda</i> | 3-3-3 | 100 | 17.3 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 8-8-8 | 100 | 28.3 |
| ARTI | <i>Artemisia tilesii</i> | 5-5-5 | 100 | 22.4 |
| PYGR | <i>Pyrola grandiflora</i> | 5-5-5 | 100 | 22.4 |
| POLEM | <i>Polemonium</i> | 2-2-2 | 100 | 14.1 |
| EQAR | <i>Equisetum arvense</i> | 2-2-2 | 100 | 14.1 |
| HEAL | <i>Hedysarum alpinum</i> | 1-1-1 | 100 | 10.0 |
| GELI2 | <i>Geocaulon lividum</i> | 1-1-1 | 100 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| LIBO3 | <i>Linnaea borealis</i> | 10-10-10 | 100 | 31.6 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 30-30-30 | 100 | 54.8 |
| VIED | <i>Viburnum edule</i> | 10-10-10 | 100 | 31.6 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 10-10-10 | 100 | 31.6 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-5-5 | 100 | 22.4 |
| SABE2 | <i>Salix bebbiana</i> | 2-2-2 | 100 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-5-5 | 100 | 22.4 |
| POBA2 | <i>Populus balsamifera</i> | 2-2-2 | 100 | 14.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 50-50-50 | 100 | 70.7 |
| PIGL | <i>Picea glauca</i> | 15-15-15 | 100 | 38.7 |
| BENE4 | <i>Betula neoalaskana</i> | 2-2-2 | 100 | 14.1 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-5-5 | 100 | 22.4 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 38-42-47 | 4.2-6-9.5 | 35-40-47 | 3 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 100-100-100 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Other woody plants | Other | Winter |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—33-33-33

Community Phase 2AL



Rooting Depth (cm): Min RV Max
87 87 87

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
0 0 0

Texture: Silt loam

AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
5.8 5.8 5.8

Subsurface Layer

Thickness (cm): Min RV Max
87 87 87

Texture: Very gravelly coarse sand, extremely gravelly loamy coarse sand

AWC (cm/cm): Min RV Max
0.03 0.08 0.25

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pH: Min RV Max
 6.9 7.1 7.3

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 15-15 | 85-85 | 7-7 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 3-3 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-45 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-3 | --- |
| SL (8-36 inches) | --- | --- | 5-5 | --- |
| SM (3-10 feet) | --- | --- | 5-7 | --- |
| TR (<15 feet) | --- | --- | --- | 1-1 |
| TM (15-40 feet) | --- | --- | --- | 2-4 |
| TT (>40 feet) | --- | --- | --- | 4-50 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 3-3-3 | 100 | 17.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 1-1-1 | 100 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 45-45-45 | 100 | 67.1 |
| MEPA | <i>Mertensia paniculata</i> | 4-4-4 | 100 | 20.0 |
| PYGR | <i>Pyrola grandiflora</i> | 3-3-3 | 100 | 17.3 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| LIBO3 | <i>Linnaea borealis</i> | 3-3-3 | 100 | 17.3 |
| GELI2 | <i>Geocaulon lividum</i> | 2-2-2 | 100 | 14.1 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 100 | 22.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| VIED | <i>Viburnum edule</i> | 7-7-7 | 100 | 26.5 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-5-5 | 100 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-1-1 | 100 | 10.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 4-4-4 | 100 | 20.0 |
| PIGL | <i>Picea glauca</i> | 2-2-2 | 100 | 14.1 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 50-50-50 | 100 | 70.7 |
| POBA2 | <i>Populus balsamifera</i> | 5-5-5 | 100 | 22.4 |
| BENE4 | <i>Betula neoalaskana</i> | 4-4-4 | 100 | 20.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 43-59-75 | 7.2-10-13.8 | 63-80-96 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 112-112-112 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|--------------|--------------------------|---------------------------|---------------|
| Moderate use | Other woody plants | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—21-21-21

Community Phase 2UP



Rooting Depth (cm): None recorded

Restrictive Features: None recorded

Drainage Class: Excessively well drained

Surface Layer

Thickness (cm): None

Texture: Extremely gravelly loamy coarse sand

| <u>AWC (cm/cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|---------------------|------------|-----------|------------|
| | 0.01 | 0.01 | 0.01 |

| <u>pH:</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------|------------|-----------|------------|
| | 7.2 | 7.2 | 7.2 |

Subsurface Layer

Thickness (cm): None

Texture: Extremely gravelly loamy coarse sand

| <u>AWC (cm/cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|---------------------|------------|-----------|------------|
| | 0.01 | 0.01 | 0.01 |

| <u>pH:</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------|------------|-----------|------------|
| | 7.2 | 7.2 | 7.2 |

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 1-1 | 5-5 | 1-1 | 1-1 | 100-100 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-1 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 2-2 | --- | --- |
| SL (8-36 inches) | --- | --- | 0.1-2 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-4 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 1-1-1 | 100 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 2-2-2 | 100 | 14.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAAL | <i>Salix alaxensis</i> | 2-2-2 | 100 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 4-4-4 | 100 | 20.0 |
| BENE4 | <i>Betula neoalaskana</i> | 1-1-1 | 100 | 10.0 |
| POTR5 | <i>Populus tremuloides</i> | 1-1-1 | 100 | 10.0 |

Site Tree Measurements: Not measuredTree Basal Area: Not measuredManagement Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observedSpecies Richness: Number of stops—1; plant species per stop (min-avg-max)—10-10-10

Community Phase 2UL



Rooting Depth (cm): Min RV Max
 17 17 17

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 1 1 1

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 4.6 4.6 4.6

Subsurface Layer

Thickness (cm): Min RV Max
 16 16 16

Texture: Very gravelly loamy coarse sand

AWC (cm/cm): Min RV Max
 0.04 0.04 0.04

pH: Min RV Max
 6.3 6.3 6.3

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-3 | 5-5 | 90-90 | 10-10 | 0-0 | 45-45 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-0.1 | --- | --- | --- |
| GT (>24 inches) | 0.1-0.1 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-3 | --- | --- |
| FT (>24 inches) | --- | 0.1-0.1 | --- | --- |
| SL (8-36 inches) | --- | --- | 0.1-3 | --- |
| SM (3-10 feet) | --- | --- | 3-3 | --- |
| ST (>10 feet) | --- | --- | 15-8 | --- |
| TR (<15 feet) | --- | --- | --- | 10-5 |
| TM (15-40 feet) | --- | --- | --- | 10-5 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| ACMI2 | <i>Achillea millefolium</i> | 3-3-3 | 100 | 17.3 |
| CHAN9 | <i>Chamerion angustifolium</i> | 3-3-3 | 100 | 17.3 |
| ARTI | <i>Artemisia tilesii</i> | 2-2-2 | 100 | 14.1 |
| EQAR | <i>Equisetum arvense</i> | 1-1-1 | 100 | 10.0 |
| GABO2 | <i>Galium boreale</i> | 1-1-1 | 100 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| RUID | <i>Rubus idaeus</i> | 3-3-3 | 100 | 17.3 |
| ROAC | <i>Rosa acicularis</i> | 2-2-2 | 100 | 14.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAAR27 | <i>Salix arctica</i> | 3-3-3 | 100 | 17.3 |

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Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 20-20-20 | 100 | 44.7 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 15-15-15 | 100 | 38.7 |
| SAAL | <i>Salix alaxensis</i> | 8-8-8 | 100 | 28.3 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 100 | 31.6 |
| POBA2 | <i>Populus balsamifera</i> | 5-5-5 | 100 | 22.4 |
| PIGL | <i>Picea glauca</i> | 3-3-3 | 100 | 17.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 100 | 31.6 |
| POBA2 | <i>Populus balsamifera</i> | 10-10-10 | 100 | 31.6 |
| PIGL | <i>Picea glauca</i> | 5-5-5 | 100 | 22.4 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—29-29-29

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 32 62.4 89

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 4 16.6 23

Texture: Moderately decomposed plant material, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 4.3 5.8 6.5

Subsurface Layer

Thickness (cm): Min RV Max
 28 45.8 66

Texture: Extremely cobbly coarse sand, extremely gravelly coarse sand, sand, coarse sand

AWC (cm/cm): Min RV Max
 0.01 0.11 0.4

pH: Min RV Max
 5.2 6.5 7.4

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point barsStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-5 | 60-90 | 10-20 | 7-10 | 0-15 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-2 | --- | --- | --- |
| FD (<4 inches) | --- | 10-10 | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 1-15 | --- |
| SL (8-36 inches) | --- | --- | 2-5 | --- |
| ST (>10 feet) | --- | --- | 3-3 | --- |
| TR (<15 feet) | --- | --- | --- | 2-2 |
| TT (>40 feet) | --- | --- | --- | 40-40 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 2-8.5-15 | 50 | 20.6 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 25 | 19.4 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PYGR | <i>Pyrola grandiflora</i> | 6-8-10 | 50 | 20.0 |
| COCA13 | <i>Cornus canadensis</i> | 1-5.5-10 | 50 | 16.6 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| LUAR2 | <i>Lupinus arcticus</i> | 7-8.5-10 | 50 | 20.6 |
| GABO2 | <i>Galium boreale</i> | 15-15-15 | 25 | 19.4 |
| EQAR | <i>Equisetum arvense</i> | 12-12-12 | 25 | 17.3 |
| GELI2 | <i>Geocaulon lividum</i> | 0.1-2-5 | 75 | 12.3 |
| HEAL | <i>Hedysarum alpinum</i> | 0.1-2.6-5 | 50 | 11.3 |
| MEPA | <i>Mertensia paniculata</i> | 0.1-2.6-5 | 50 | 11.3 |

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Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 0.1-4.8-10 | 100 | 21.9 |
| EMNI | <i>Empetrum nigrum</i> | 3-9-15 | 50 | 21.2 |
| LIBO3 | <i>Linnaea borealis</i> | 1-4-10 | 75 | 17.3 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 5-12.5-20 | 50 | 25.0 |
| ROAC | <i>Rosa acicularis</i> | 2-11-20 | 50 | 23.5 |
| RIHU | <i>Ribes hudsonianum</i> | 15-15-15 | 25 | 19.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 25-25-25 | 50 | 35.4 |
| VIED | <i>Viburnum edule</i> | 10-10-10 | 25 | 15.8 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 3-9.3-15 | 75 | 26.5 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-2-3 | 75 | 12.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-8.5-12 | 50 | 20.6 |
| BENE4 | <i>Betula neoalaskana</i> | 2-5-8 | 50 | 15.8 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 20-42.5-60 | 100 | 65.2 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 25 | 11.2 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 93-152-225 | 9-13-18.8 | 68-82-111 | 11 | B |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 118-142-185 | 4 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Other woody plants | Other | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—19-24.5-30

Community Phase HCPCP



Rooting Depth (cm): Min RV Max
 35 60.5 86

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 0 10.5 21

Texture: Loamy sand, peat

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

AWC (cm/cm): Min RV Max
0.08 0.22 0.35

pH: Min RV Max
3.3 4.9 6.5

Subsurface Layer

Thickness (cm): Min RV Max
35 50 65

Texture: Extremely cobbly coarse sand, highly decomposed plant material, coarse sand, mucky peat

AWC (cm/cm): Min RV Max
0.02 0.16 0.4

pH: Min RV Max
5.4 6.1 7.2

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: Moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools; low-gradient, meandering, alluvial riffle/pool channels with point bars

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 1-5 | 15-40 | 10-70 | 3-25 | 0-50 | 0-1 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FM (4-24 inches) | --- | 1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 1-2 | --- |
| SL (8-36 inches) | --- | --- | 15-2 | --- |
| SM (3-10 feet) | --- | --- | 40-40 | --- |
| TR (<15 feet) | --- | --- | --- | 2-5 |
| TM (15-40 feet) | --- | --- | --- | 20-5 |
| TT (>40 feet) | --- | --- | --- | 10-10 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|------------------------------|------------------|-------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 33 | 12.9 |
| CAREX | <i>Carex</i> | 1-2-3 | 67 | 11.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|------------------------------|------------------|-------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 15-15-15 | 33 | 22.4 |
| EQPA | <i>Equisetum palustre</i> | 5-5-5 | 33 | 12.9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-5-7 | 100 | 22.4 |
| EMNI | <i>Empetrum nigrum</i> | 2-3.3-5 | 100 | 18.3 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 2-8.5-15 | 67 | 23.8 |
| LEGR | <i>Ledum groenlandicum</i> | 15-15-15 | 33 | 22.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 3-4-5 | 67 | 16.3 |
| ROAC | <i>Rosa acicularis</i> | 1-1.7-2 | 100 | 12.9 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 40-40-40 | 33 | 36.5 |
| SAPU15 | <i>Salix pulchra</i> | 20-20-20 | 33 | 25.8 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-5-5 | 67 | 18.3 |
| BENE4 | <i>Betula neoalaskana</i> | 2-3.5-5 | 67 | 15.3 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 33 | 12.9 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-7.5-10 | 67 | 22.4 |
| BENE4 | <i>Betula neoalaskana</i> | 2-3.5-5 | 67 | 15.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 10-12.5-15 | 67 | 28.9 |
| PIMA | <i>Picea mariana</i> | 20-20-20 | 33 | 25.8 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 33 | 12.9 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 10-10-10 | 33 | 18.3 |
| PIGL | <i>Picea glauca</i> | 1-3-5 | 67 | 14.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 81-97-121 | 4.5-7-12.7 | 29-43-64 | 7 | B |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 35-43.3-50 | 3 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | | | Unknown |
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—14-20.7-24

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca/Salix pulchra/Carex*

Ecological Classification ID: F231XY140AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Hills

Slope (percent): Min Max
5 45

Elevation (feet): Min Max
2,625 4,183

Range of Aspect Direction: South to northeast (clockwise)

Water Table Depth (cm): Min Max
2 50

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max
20 110

Mean Annual Precipitation (inches): Low High
11 32

Mean Annual Air Temperature (°F): Low High
19 28

Monthly Data:

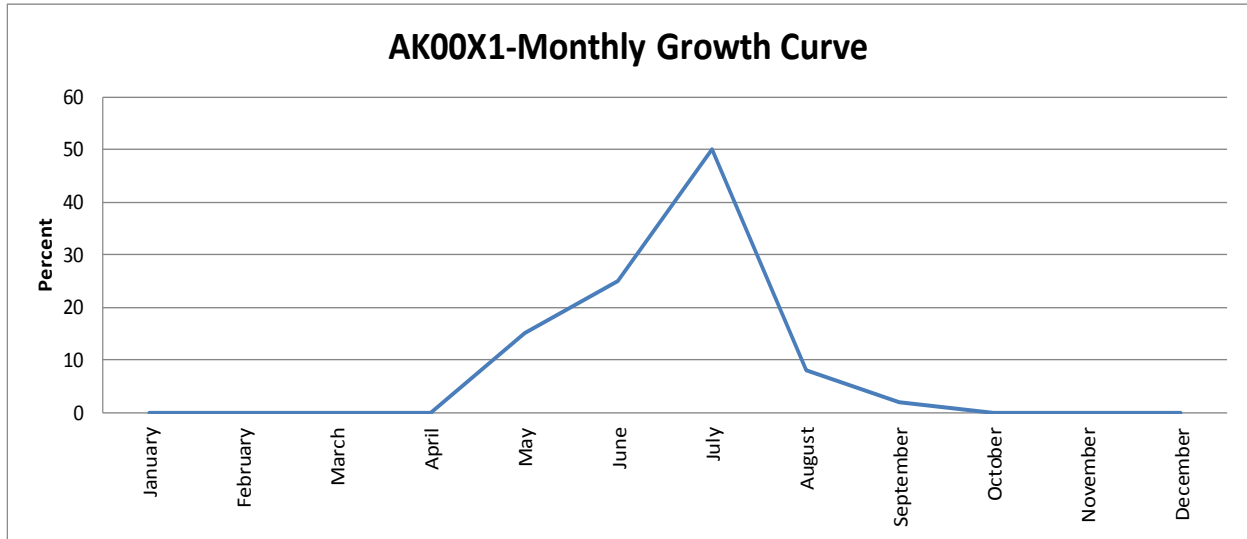
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31OM2—D31-Subalpine woodland silty colluvial slopes
D31SD1—D31-Subalpine woodland silty colluvial slopes
D31TF1—D31-Subalpine woodland silty colluvial slopes

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryorthents

Dominant Parent Material: Organic material over gravelly colluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 5 10 19

pH: Low RV High
 3.8 6.1 7.4

Effective CEC (me/100g): Low High
 12.7 33.9

CEC (me/100g): Min RV Max
 5.1 20.7 62

Organic Matter (percent): Low RV High
 1.5 22.4 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 1 1.47


Plant Community Phases

| | | | |
|--|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY140AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This subalpine ecological site generally is on nearly level to moderately steep slopes of hills on summits, shoulders, and backslopes at high elevations (<20% slopes; 1,050 to 2,000 meters elevation). The slopes generally are concave; therefore, the soils are wetter than those in more convex positions (e.g., ecological site F231XY164AK). The soils in community phase 1.1 are classified as Cryorthents and are composed of organic matter over loamy and/or gravelly cryoturbate. Some tree cover is on this subalpine ecological site, but the cover in the climax phase generally is <25% and is limited due to the cold microclimate. Ecological site F231XY184AK is similar to this site, but site F231XY184AK has a slightly higher percentage of tree cover and has permafrost.</p> <p>Fire resulted in three observed phases. Fire is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. High-severity fire events are more typical on this ecological site than low-severity fire events. Low-severity and high-severity fire events appear to cause differences in the depth of organic material on the soil surface, the presence and/or depth to permafrost, and the present and potential vegetation.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div>Subalpine woodland loamy slopes wet</div><div>F231XY140AK</div><div><div><div>1.1 (HCPC) White spruce-scrub birch-willow-feathermoss woodland</div><div>1.1b ↓</div><div>1.2 (2FL) Mixed scrub-lichen-feathermoss scrubland</div><div>1.2a ↓</div><div>1.3 (2FE) Mixed scrub-grass scrubland</div></div><div><div>1.1a ↘</div><div>1.2b ↑</div><div>1.3a ↑</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |


| | |
|-------------------------|--|
| <p>State Narrative:</p> | <p>The dominant vegetation on the climax phase is a mixture of trees and shrubs. The tree cover is in the tall, medium, regenerative, and stunted strata and is considered woodland (10 to 25% cover). The climax phase has a high diversity of shrubs, forbs, and lichen. In three observation areas, the tree cover is a mixture of black and white spruce. This cover could be a post-climax or unique fire phase within the reference state, but these areas were included in the climax phase because of the limited number of observations and the similar understory species present (phase 1.1).</p> <p>During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Many pre-fire species likely will regenerate after the fire event, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow). With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.2.</p> <p>In interior Alaska, the dominant subalpine tree species is <i>Picea glauca</i>. As <i>Picea glauca</i> establishes after fire from offsite seed sources, the fire return interval likely plays a significant role in controlling the abundance of white spruce. Areas with a shorter fire return interval likely will have less long-term coniferous tree cover than areas with a longer fire return interval.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|-------------------------|--|

| | |
|------------------|--|
| <p>Phase 1.1</p> |  |
|------------------|--|

| | | | |
|--|---|-----------------------|--|
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-scrub birch-willow-feathermoss woodland |
| Community Phase Narrative: | | | |
| <p>The tree canopy is composed primarily of medium-sized trees. <i>Picea glauca</i> is the most common tree species, but <i>Picea mariana</i> is also present (total mature tree cover ~15%). <i>Picea glauca</i> averages 111 years in age. Shrubs are abundant, typically totaling more than 50% cover, and are primarily in the medium, low, and dwarf strata. The most common medium shrubs are <i>Betula glandulosa</i> and a variety of <i>Salix sp.</i> The most common low shrubs are <i>Vaccinium sp.</i> and <i>Ledum palustre</i>. Numerous dwarf shrub species are present (9 species). Species unique to this ecological site are <i>Dryas octopetala</i>, <i>Arctostaphylos rubra</i>, <i>Cassiope tetragona</i>, and <i>Salix reticulata</i>. Graminoids and forbs are minor components in the plant community. Graminoid cover consists primarily of <i>Carex sp.</i> The diversity of forbs is high (commonly more than 25 species per plot), but all of the species have minor distribution. Forb species unique to this ecological site are <i>Saussurea angustifolia</i>, <i>Valeriana capitata</i>, and <i>Papavar sp.</i> Moss cover typically is more abundant than the lichen cover. The moss is primarily feathermoss species, including <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i>.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | High-intensity fire. Fire completely removed the tree canopy and reduced the surface organic matter content. | | |
| 1.1b | Low-intensity fire or spot fire. A low-intensity or spot fire likely would result in a community that resembles a late fire phase community. Some shrubs and graminoids can quickly recolonize from below-ground root reserves that are not consumed during the fire event and become dominant. | | |

| | | | |
|--|-----------------------------|---|--|
| Phase 1.2 | |  | |
| Community Phase Number: | 1.2 | Community Phase Name: | Mixed scrub-lichen-feathermoss scrubland |
| Community Phase Narrative: | | | |
| <p>The majority of the tree canopy consists of stunted or regenerating <i>Picea glauca</i>. The age of trees was not assessed. As in community phase 1.1, the shrubs are abundant, typically totally more than 50% cover, and are primarily in the medium, low, and dwarf shrub strata. The most common medium shrub is <i>Alnus viridis</i>, the most common low shrub is <i>Ledum palustre</i>, and the most common dwarf shrub is <i>Cassiope tetragona</i>. The diversity of graminoids and forbs is lower than that of phase 1.1. Common species are <i>Calamagrostis canadensis</i>, <i>Carex bigelowii</i>, <i>Chamerion angustifolium</i>, and <i>Petasites frigidus</i>. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | High-intensity fire. | | |

| | |
|------|---|
| 1.2b | Normal time and growth without fire disturbance. The major difference between the late and climax phase community is the size and quantity of trees. The fire return interval is presumed to be shorter than that of phase 1.1 and longer than that of phase 1.3. |
|------|---|

| | | | |
|--|---|-----------------------|-----------------------------|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Mixed scrub-grass scrubland |
| Community Phase Narrative: | | | |
| <p>The tree canopy is in the stunted stratum and is dominantly <i>Picea mariana</i>. The dominant vegetation is a mixture of shrubs and graminoids. The shrub cover is >50% and is primarily medium and low species. The most common medium shrub is <i>Salix sp.</i>, and the most common low shrub is <i>Betula glandulosa</i>. The most abundant graminoid is <i>Poa sp.</i>, and most abundant forb is <i>Chamerion angustifolium</i>. One observation of this phase was conducted.</p> | | | |

| Community Pathways | |
|--------------------|--------------------------------------|
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Normal time and growth without fire. |

Dynamic Soil Properties within Representative Rooting Depth
Community Phase 2FE



Rooting Depth (cm): Min Avg Max
 86 86 86

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min Avg Max
 2 2 2

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Subsurface Layer

Thickness (cm): Min Avg Max
84 84 84

Texture: Gravelly fine sandy loam, very gravelly sandy loam

AWC (cm/cm): Min Avg Max
0.07 0.1 0.12

pH: Min Avg Max
5.1 5.4 5.8

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 5-5 | 10-10 | 15-15 | 10-10 | 10-10 | 15-15 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-7 | --- | --- | --- |
| FD (<4 inches) | --- | 1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-10 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-2 | --- |
| SL (8-36 inches) | --- | --- | 10-20 | --- |
| SM (3-10 feet) | --- | --- | 10-5 | --- |
| TS (<15 feet) | --- | --- | --- | 3-3 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|------------------------------|------------------|-------------------------|
| POA | <i>Poa</i> | 15-15-15 | 100 | 38.7 |
| HIAL3 | <i>Hierochloe alpina</i> | 7-7-7 | 100 | 26.5 |
| FEAL | <i>Festuca altaica</i> | 7-7-7 | 100 | 26.5 |
| CABI5 | <i>Carex bigelowii</i> | 6-6-6 | 100 | 24.5 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|------------------------------|------------------|-------------------------|
| RANUN | <i>Ranunculus</i> | 1-1-1 | 100 | 10.0 |
| PEFR5 | <i>Petasites frigidus</i> | 1-1-1 | 100 | 10.0 |
| CALA7 | <i>Campanula lasiocarpa</i> | 1-1-1 | 100 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 10-10-10 | 100 | 31.6 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-2-2 | 100 | 14.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 20-20-20 | 100 | 44.7 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 10-10-10 | 100 | 31.6 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-2-2 | 100 | 14.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SALIX | <i>Salix</i> | 10-10-10 | 100 | 31.6 |
| SAGL | <i>Salix glauca</i> | 5-5-5 | 100 | 22.4 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 3-3-3 | 100 | 17.3 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—18-18-18

Community Phase 2FL



Rooting Depth (cm): Min RV Max
 54 71 88

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 8 10 12

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 3.4 4.2 4.9

Subsurface Layer

Thickness (cm): Min RV Max
 46 61 76

Texture: Extremely cobbly silt loam, very gravelly sandy loam, gravel

AWC (cm/cm): Min RV Max
 0.1 0.14 0.18

pH: Min RV Max
 6 6.3 6.6

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 35-80 | 20-45 | 5-25 | 1-5 | 0-0 | 0-1 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GD (<4 inches) | 1-2 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-1 | --- | --- |
| FM (4-24 inches) | --- | 0.01-0.01 | --- | --- |
| SD (<8 inches) | --- | --- | 1-30 | --- |
| SM (3-10 feet) | --- | --- | 1-4 | --- |
| TS (<15 feet) | --- | --- | --- | 8-8 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 10-10-10 | 33 | 18.3 |
| POARA2 | <i>Poa arctica</i> ssp. <i>arctica</i> | 10-10-10 | 33 | 18.3 |
| LUPA4 | <i>Luzula parviflora</i> | 7-7-7 | 33 | 15.3 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 8-8-8 | 33 | 16.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| LYAN2 | <i>Lycopodium annotinum</i> | 1-3-5 | 67 | 14.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 15-15-15 | 33 | 22.4 |
| CHAN9 | <i>Chamerion angustifolium</i> | 10-10-10 | 33 | 18.3 |
| MEPA | <i>Mertensia paniculata</i> | 3-3-3 | 33 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| CATE11 | <i>Cassiope tetragona</i> | 5-17.5-30 | 67 | 34.2 |
| DROC | <i>Dryas octopetala</i> | 20-20-20 | 33 | 25.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-10-15 | 67 | 25.8 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-6-15 | 100 | 24.5 |
| EMNI | <i>Empetrum nigrum</i> | 5-7.5-10 | 67 | 22.4 |
| LOPR | <i>Loiseleuria procumbens</i> | 3-3-3 | 33 | 10.0 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 20-20-20 | 33 | 25.8 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-10-15 | 67 | 25.8 |
| B EGL | <i>Betula glandulosa</i> | 5-10-15 | 67 | 25.8 |
| BENA | <i>Betula nana</i> | 10-10-10 | 33 | 18.3 |
| SAPU15 | <i>Salix pulchra</i> | 8-8-8 | 33 | 16.3 |
| SABE2 | <i>Salix bebbiana</i> | 7-7-7 | 33 | 15.3 |
| SPST3 | <i>Spiraea stevenii</i> | 3-3-3 | 33 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 15-25-35 | 67 | 40.8 |
| SAGL | <i>Salix glauca</i> | 25-25-25 | 33 | 28.9 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 15-15-15 | 33 | 22.4 |
| SPST3 | <i>Spiraea stevenii</i> | 5-5-5 | 33 | 12.9 |
| B EGL | <i>Betula glandulosa</i> | 4-4-4 | 33 | 11.5 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 2-6.7-10 | 100 | 25.8 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 33 | 12.9 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—26-31-39

Community Phase HCPC



Rooting Depth (cm): Min RV Max
15 65 154

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
10 18.9 34

Texture: Moderately decomposed plant material, mucky peat, peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.8 5.8 7.4

Subsurface Layer

Thickness (cm): Min RV Max
13 46.2 120

Texture: Gravelly coarse sandy loam, cobbly coarse sandy loam, gravelly loam, gravelly loamy coarse sand, gravelly silt loam, gravelly sandy loam, very gravelly coarse sandy loam, very gravelly silt loam, very gravelly sandy loam, extremely gravelly loamy coarse sand, channery silt loam, very channery sandy loam, loam, silt loam, sandy loam

AWC (cm/cm): Min RV Max
0.04 0.15 0.25

pH: Min RV Max
4.9 6.2 7.4

Influencing Water FeaturesNWI Code: PFO4NWI Description: Palustrine, Forested, Needle-Leaved EvergreenRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-40 | 15-90 | 4-60 | 0-12 | 0-5 | 0-5 | 0-10 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 30-30 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-0.01 | --- | --- |
| FM (4-24 inches) | --- | 1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-5 | --- |
| SL (8-36 inches) | --- | --- | 15-7 | --- |
| SM (3-10 feet) | --- | --- | 10-5 | --- |
| TR (<15 feet) | --- | --- | --- | 1-10 |
| TM (15-40 feet) | --- | --- | --- | 1-7 |

Plant Species Canopy Cover (%), Constancy (%), and Occurrence Index:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CAB15 | <i>Carex bigelowii</i> | 1-13-40 | 74 | 30.9 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-4.7-15 | 53 | 15.7 |
| CAPO | <i>Carex podocarpa</i> | 0.1-5.2-10 | 42 | 14.7 |
| FEAL | <i>Festuca altaica</i> | 1-5.4-15 | 26 | 11.9 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 0-1.8-8 | 53 | 9.8 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| SAAN3 | <i>Saussurea angustifolia</i> | 0.1-2.9-10 | 58 | 13.0 |
| MEPA | <i>Mertensia paniculata</i> | 0.1-3.5-7 | 32 | 10.5 |

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Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------------|---------------------------------|------------------|----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 3-10.3-25 | 95 | 31.3 |
| SARE2 | <i>Salix reticulata</i> | 3-11.6-30 | 74 | 29.2 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-5.3-20 | 95 | 22.4 |
| ARRU | <i>Arctostaphylos rubra</i> | 3-8.3-20 | 53 | 20.9 |
| DROC | <i>Dryas octopetala</i> | 1-7.7-15 | 47 | 19.1 |
| CATE11 | <i>Cassiope tetragona</i> | 1-6.8-15 | 42 | 16.9 |
| VAUL | <i>Vaccinium uliginosum</i> | 3-6-10 | 16 | 9.7 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 2-14.3-30 | 79 | 33.6 |
| LEGR | <i>Ledum groenlandicum</i> | 1-6.9-15 | 42 | 17.0 |
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 1-4.8-10 | 47 | 15.0 |
| BEGL | <i>Betula glandulosa</i> | 7-11.7-18 | 16 | 13.6 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------|---------------------------------|------------------|----------------------------|
| BEGL | <i>Betula glandulosa</i> | 2-21.5-60 | 79 | 41.2 |
| SAPU15 | <i>Salix pulchra</i> | 2-14.7-40 | 89 | 36.3 |
| SAGL | <i>Salix glauca</i> | 3-16.2-55 | 47 | 27.7 |
| SALIX | <i>Salix</i> | 5-13.3-25 | 16 | 14.5 |
| SABE2 | <i>Salix bebbiana</i> | 5-7.3-10 | 16 | 10.8 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 0-3.8-8 | 95 | 19.1 |
| PIMA | <i>Picea mariana</i> | 1-7.8-10 | 21 | 12.8 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 1-11.6-25 | 95 | 33.1 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 2-4.3-10 | 58 | 15.7 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Picea glauca</i> | 33-114-265 | 0.1-9-20.4 | 12-34-45 | 40 | B |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 5-31.3-58 | 12 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | | | Unknown |
| Moderate use | Willows | Moose | Summer |
| No observed use | | | Not grazed/browsed |
| Slight use | | Caribou | Spring |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | Moose | Winter |

Notable Plants: *Cerastium maximum*

Species Richness: Number of stops—19; plant species per stop (min-avg-max)—26-35.4-48

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca*/*Alnus viridis* ssp. *fruticosa*

Ecological Classification ID: F231XY151AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: High flood plains

Slope (percent): Min Max
 1 3

Elevation (feet): Min Max
 656 2,133

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max
 2 110

Flooding: Frequency Duration
 Rare Very brief

Ponding: None

Runoff: Low

Frost-Free Days: Min Max
 50 110

Mean Annual Precipitation (inches): Low High
 10 21

Mean Annual Air Temperature (°F): Low High
 23 28

Monthly Data:

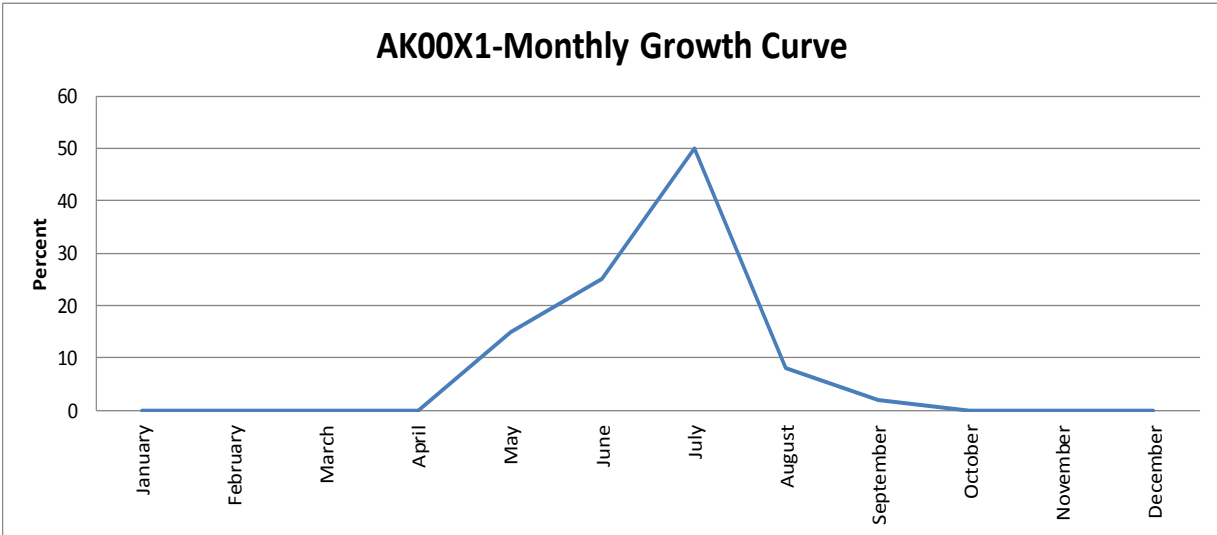
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31HL1—D31-Boreal forest loamy high flood plains, frozen

D31UC4—D31-Boreal forest loamy high flood plains, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Fluventic Haploorthels

Dominant Parent Material: Organic material over loamy alluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
15 30 58

pH: Low RV High
3.4 6.6 7.4

Effective CEC (me/100g): Low High
16 40

CEC (me/100g): Min RV Max
4.8 23.9 62


Organic Matter (percent): Low RV High
1 27.7 80

Bulk Density (1/3-Bar): Min RV Max
0.58 0.9 1.17


Plant Community Phases

| | | | |
|--|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY151AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is associated with all river systems that are subject to occasional to very rare flooding, with the exception of the Yukon River. A decrease in the intensity and frequency of flooding favors the replacement of tall scrubs with tree species, marking a successional progression from site F231XY130AK (starting with community phase 1.3). As the site progresses from community phase 1.3 to 1.1, the surface organic matter content and moss cover increases, permafrost rises in soil profile, and tree composition shifts from dominantly deciduous trees to dominantly coniferous trees. The soils in community phase 1.1 are classified as Haplorthels and are composed of organic material over loamy alluvium.</p> <p>As flooding becomes very rare, this ecological site begins to shift toward that of a flood plain terrace community (e.g., site F231XY169AK). Indicators for this shift are a decrease in the size and density of white spruce, an increase in the abundance and density of ericaceous vegetation and black spruce, and an increase in the likelihood of fire disturbance. These areas are described as post-climax communities (community phase 1.1P).</p> <p>Seven observations of this site were conducted.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div>Boreal forest loamy frozen floodplain</div><div>F231XY151AK</div><div><div><div>1.1 (HCPC) White spruce-alder-low bush cranberry- blue joint-horsetail feathermoss forest</div><div>1.1 a</div><div>1.1P (HCPCP) Black spruce-alder-labrador tea-cloudberry-low bush cranberry-Sphagnum woodland</div></div><div><div>1.2 (2AL) White spruce-paper birch-alder-prickly rose-blue joint-horsetail forest</div><div>1.2 a</div><div>1.1 (HCPC)</div></div><div><div>1.3 (2AE) Paper birch-white spruce-alder-bebb willow-prickly rose-bluejoint-horsetail forest</div><div>1.3 a</div><div>1.2 (2AL)</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |


| | |
|------------------|---|
| State Narrative: | <p>If the intensity of flooding results in removal the tree canopy, this site transitions to ecological site F231XY130AK.</p> <p>Fire and flooding are disturbances believed to occur in the post-climax community phase. Unique community phases occur with these associated disturbances, but limited sampling of post-climax plant communities was completed. As a result, no additional phases were created in association with the post-climax community.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|------------------|---|

| | | | |
|--|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-alder-low bush cranberry- blue joint-horsetail feathermoss forest |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i> is the dominant canopy species. <i>Populus balsamifera</i> and <i>Betula neoalaskana</i> are trace species. The tree cover is primarily in the tall tree stratum (~40% total mature tree cover; average age of white spruce is 149 years). Shrub cover is distributed primarily between the tall and dwarf strata (~70% total shrub cover), and the most common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Rosa acicularis</i>, <i>Arctostaphylos rubra</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids and forbs are abundant (~45% combined cover), and common species are <i>Calamagrostis canadensis</i>, <i>Equisetum arvense</i>, <i>Mertensia paniculata</i>, and <i>Pyrola grandiflora</i>. Moss forms an extensive ground mat (~80% cover,) and the most common species is <i>Hylocomium splendens</i>. Two observations of this phase were conducted.</p> | | | |


| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Normal time and growth without flooding. White spruce forest declines in productivity, and ericaceous plants and black spruce increase. Site begins to transition to a flood plain terrace site. |

| | | | |
|---|---|-----------------------|---|
| Phase 1.1P |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Black spruce-alder-Labrador tea-cloudberry-low bush cranberry-Sphagnum woodland |
| Community Phase Narrative: | | | |
| <p>The tree canopy is composed primarily of <i>Picea mariana</i>, and <i>Betula neoalaskana</i> is a trace species. The tree cover is distributed among the tall, medium, and regenerative tree strata (~15% mature tree cover). The shrub cover is distributed among the tall, low, and dwarf strata (~110% cover), and the most abundant species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Ledum groenlandicum</i>, <i>Rubus chamaemorus</i>, and <i>Vaccinium vitis-idaea</i>. Forbs, graminoids, and lichen are minor vegetative components. <i>Sphagnum</i> moss is abundant (~50% cover). One observation of this phase was conducted.</p> | | | |

| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.1Pa | Fire and flooding are believed to create unique plant communities for this post-climax community phase. Unique community types were not developed because of the limited sampling. |

| | | | |
|--|---|-----------------------|---|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | White spruce-paper birch-alder-prickly rose-blue joint-horsetail forest |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i> is the dominant canopy species, and <i>Betula neoalaskana</i> is codominant. The tree cover is distributed between the tall and medium tree strata (~55% total mature tree cover; average age of white spruce is 115 years). The shrub cover is distributed primarily between the tall and medium shrub strata (~55% shrub cover), and common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Rosa acicularis</i>, <i>Viburnum edule</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids and forbs are abundant (~70% combined cover), and common species are <i>Calamagrostis canadensis</i>, <i>Equisetum arvense</i>, <i>Mertensia paniculata</i>, and <i>Pyrola grandiflora</i>. Moss forms an extensive ground mat (~40% cover), and the most common species is <i>Hylocomium splendens</i>. Two observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|---|
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Normal time and growth. White spruce forest matures and is dominant in the tree canopy. |

| | | | |
|--|---|-----------------------|--|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Paper birch-white spruce-alder-bebb willow-prickly rose-bluejoint-horsetail forest |
| Community Phase Narrative: | | | |
| <p><i>Betula neoalaskana</i> is the dominant canopy species, and <i>Picea glauca</i> is codominant. The tree cover is distributed among the tall, medium, and regenerative strata (~60% total mature tree cover; average age of white spruce is 65 years). The shrub cover is distributed primarily among tall, medium, and low shrub strata (~90% cover), and common species are <i>Salix bebbiana</i>, <i>Alnus viridis</i> ssp. <i>fruticosa</i>, and <i>Rosa acicularis</i>. Graminoids and forbs are abundant (~70% combined cover), and the most abundant species are <i>Calamagrostis canadensis</i>, <i>Arctagrostis latifolia</i>, <i>Equisetum sylvaticum</i>, and <i>Equisetum pratense</i>. Two observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Normal time and growth. Deciduous trees are outcompeted by white spruce and are replaced by white spruce in the tree canopy. |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2AE



Rooting Depth (cm): Min RV Max
 65 76 87

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 2 2.5 3

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 6.5 6.5 6.6

Subsurface Layer

Thickness (cm): Min RV Max
 63 73.5 84

Texture: Permanently frozen silt loam, silt loam

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AWC (cm/cm): Min RV Max
 0.22 0.24 0.25

pH: Min RV Max
 6 6.6 7

Influencing Water Features

NWI Code: R2UB1

NWI Description: Riverine, Lower Perennial, Unconsolidated Bottom, Cobble-Gravel.

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool, channels with point bars

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-2 | 10-15 | 60-80 | 5-20 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-0.1 | --- | --- | --- |
| GT (>24 inches) | 1-10 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-3 | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| FT (>24 inches) | --- | 0.1-2 | --- | --- |
| SL (8-36 inches) | --- | --- | 0.1-0.1 | --- |
| SM (3-10 feet) | --- | --- | 45-5 | --- |
| ST (>10 feet) | --- | --- | 2-50 | --- |
| TR (<15 feet) | --- | --- | --- | 1-1 |
| TM (15-40 feet) | --- | --- | --- | 15-2 |
| TT (>40 feet) | --- | --- | --- | 3-7 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ARLA2 | <i>Arctagrostis latifolia</i> | 40-40-40 | 50 | 44.7 |
| CACA4 | <i>Calamagrostis canadensis</i> | 10-15-20 | 100 | 38.7 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| ORSE | <i>Orthilia secunda</i> | 0.1-2.6-5 | 100 | 16.0 |
| CIAL | <i>Circaea alpina</i> | 3-3-3 | 50 | 12.2 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| EQPR | <i>Equisetum pratense</i> | 40-40-40 | 50 | 44.7 |
| EQSY | <i>Equisetum sylvaticum</i> | 15-15-15 | 50 | 27.4 |
| EQAR | <i>Equisetum arvense</i> | 5-5-5 | 50 | 15.8 |
| CHAN9 | <i>Chamerion angustifolium</i> | 2-2-2 | 50 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| THOC | <i>Thalictrum occidentale</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 10-10-10 | 50 | 22.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 35-35-35 | 50 | 41.8 |
| SPST3 | <i>Spiraea stevenii</i> | 5-5-5 | 50 | 15.8 |
| RITR | <i>Ribes triste</i> | 5-5-5 | 50 | 15.8 |
| LEGR | <i>Ledum groenlandicum</i> | 2-2-2 | 50 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 45-45-45 | 50 | 47.4 |
| VIDE | <i>Viburnum edule</i> | 5-5-5 | 50 | 15.8 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-30-50 | 100 | 54.8 |
| SABE2 | <i>Salix bebbiana</i> | 2-5-8 | 100 | 22.4 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 5-5-5 | 50 | 15.8 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 50 | 22.4 |
| PIGL | <i>Picea glauca</i> | 1-3-5 | 100 | 17.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 15-17.5-20 | 100 | 41.8 |
| PIGL | <i>Picea glauca</i> | 2-6-10 | 100 | 24.5 |

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Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|----------------------------|---------------------------------|------------------|-----------------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-25-40 | 100 | 50.0 |
| PIGL | <i>Picea glauca</i> | 5-6-7 | 100 | 24.5 |
| POBA2 | <i>Populus balsamifera</i> | 3-3-3 | 50 | 12.2 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> <u>Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------------|
| <i>Betula neoalaskana</i> | 85-85-85 | 8.8-9-8.8 | 60-60-60 | 1 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 65-87.5-110 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |

Notable Plants: *Thalictrum occidentale*

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—22-27.5-33

Community Phase 2AL



| <u>Rooting Depth (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|----------------------------|------------|-----------|------------|
| | 50 | 56 | 62 |

Restrictive Feature: Permafrost

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Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 1.5 3

Texture: Silt loam

AWC (cm/cm): Min RV Max
0.2 0.27 0.35

pH: Min RV Max
7.1 7.1 7.2

Subsurface Layer

Thickness (cm): Min RV Max
50 54.5 59

Texture: Permanently frozen silt loam, silt loam

AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
5.9 6.4 7.1

Influencing Water Features

NWI Code: R4SB4

NWI Description: Riverine, Intermittent, Stream Bed, Sand

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool, channels with point bars;
moderately entrenched, moderate-gradient, riffle-dominate channel with infrequently spaced pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-3 | 10-70 | 25-80 | 10-10 | 0-4 | 0-0 | 0-3 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 20-20 | --- | --- | --- |
| FD (<4 inches) | --- | 1-1 | --- | --- |
| FM (4-24 inches) | --- | 2-70 | --- | --- |
| SD (<8 inches) | --- | --- | 3-3 | --- |
| SL (8-36 inches) | --- | --- | 1-1 | --- |
| SM (3-10 feet) | --- | --- | 25-3 | --- |
| ST (>10 feet) | --- | --- | 5-5 | --- |
| TR (<15 feet) | --- | --- | --- | 2-3 |
| TM (15-40 feet) | --- | --- | --- | 10-15 |
| TT (>40 feet) | --- | --- | --- | 25-25 |

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Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 18-19-20 | 100 | 43.6 |
| POA | <i>Poa</i> | 2-2-2 | 50 | 10.0 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| PYGR | <i>Pyrola grandiflora</i> | 1-5.5-10 | 100 | 23.5 |
| LYAN2 | <i>Lycopodium annotinum</i> | 3-3-3 | 50 | 12.2 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 15-42.5-70 | 100 | 65.2 |
| MEPA | <i>Mertensia paniculata</i> | 2-2.5-3 | 100 | 15.8 |
| COPA28 | <i>Comarum palustre</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 3-3-3 | 100 | 17.3 |
| LIBO3 | <i>Linnaea borealis</i> | 2-2-2 | 50 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| RIHU | <i>Ribes hudsonianum</i> | 3-3-3 | 50 | 12.2 |
| RITR | <i>Ribes triste</i> | 2-2-2 | 50 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 25-27.5-30 | 100 | 52.4 |
| VIED | <i>Viburnum edule</i> | 3-3-3 | 50 | 12.2 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-10-15 | 100 | 31.6 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 5-5-5 | 50 | 15.8 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 2-2.5-3 | 100 | 15.8 |
| BENE4 | <i>Betula neoalaskana</i> | 2-2.5-3 | 100 | 15.8 |

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Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 15-15-15 | 100 | 38.7 |
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 100 | 31.6 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 20-22.5-25 | 100 | 47.4 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 67-115-153 | 5.5-10-15.6 | 37-62-91 | 6 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 65-67.5-70 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Other | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—16-27.5-39

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 42 64 86

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 14 15.5 17

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 4.9 5.1 5.3

Subsurface Layer

Thickness (cm): Min RV Max
 28 48.5 69

Texture: Very cobbly loamy sand, silt loam, sandy loam

AWC (cm/cm): Min RV Max
 0.06 0.14 0.25

pH: Min RV Max
 6.4 7.2 7.8

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: Low-gradient, meandering, alluvial riffle/pool, channels with point barsStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-3 | 75-80 | 5-35 | 7-10 | 0-0 | 0-0 | 0-2 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 30-30 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 2-2 | --- |
| SL (8-36 inches) | --- | --- | 0.1-1 | --- |
| SM (3-10 feet) | --- | --- | 12-12 | --- |
| ST (>10 feet) | --- | --- | 80-80 | --- |
| TM (15-40 feet) | --- | --- | --- | 3-5 |
| TT (>40 feet) | --- | --- | --- | 35-35 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:Stratum—GD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| CACO10 | <i>Carex concinna</i> | 5-5-5 | 50 | 15.8 |
| EQSC | <i>Equisetum scirpoides</i> | 2-2-2 | 50 | 10.0 |

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 5-5-5 | 50 | 15.8 |
| CABI5 | <i>Carex bigelowii</i> | 2-2-2 | 50 | 10.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 30-30-30 | 50 | 38.7 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 30-30-30 | 50 | 38.7 |
| PYAS | <i>Pyrola asarifolia</i> | 5-5-5 | 50 | 15.8 |
| CIAL | <i>Circaea alpina</i> | 3-3-3 | 50 | 12.2 |

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Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-11-20 | 100 | 33.2 |
| ARRU | <i>Arctostaphylos rubra</i> | 15-15-15 | 50 | 27.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 5-5-5 | 50 | 15.8 |
| SAPU15 | <i>Salix pulchra</i> | 3-3-3 | 50 | 12.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 12-12-12 | 50 | 24.5 |
| B EGL | <i>Betula glandulosa</i> | 7-7-7 | 50 | 18.7 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 3-3-3 | 50 | 12.2 |
| EMNI | <i>Empetrum nigrum</i> | 3-3-3 | 50 | 12.2 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 80-80-80 | 50 | 63.2 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 4-4-4 | 50 | 14.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 3-4-5 | 100 | 20.0 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 50 | 15.8 |
| POBA2 | <i>Populus balsamifera</i> | 2-2-2 | 50 | 10.0 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 20-27.5-35 | 100 | 52.4 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 105-148-192 | 7.6-13-19.1 | 37-75-105 | 6 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 118-129-140 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|--------------|--------------------------|---------------------------|---------------|
| Moderate use | | Moose | Winter |
| Slight use | Other woody plants | Moose | Spring |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—23-24.5-26

Community Phase HCPCP



Rooting Depth (cm): Min RV Max
42 42 42

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
38 38 38

Texture: Peat, mucky silt loam

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.8 3.8 3.8

Subsurface Layer

Thickness (cm): Min RV Max
4 4 4

Texture: Permanently frozen silt loam

AWC (cm/cm): Not applicable

pH: Min Avg Max
6.4 6.4 6.4

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-1 | 90-90 | 30-30 | 2-2 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 5-5 | --- | --- | --- |
| GT (>24 inches) | 5-5 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-10 | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| ST (>10 feet) | --- | --- | 40-40 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TM (15-40 feet) | --- | --- | --- | 1-10 |
| TT (>40 feet) | --- | --- | --- | 7-7 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 100 | 22.4 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 5-5-5 | 100 | 22.4 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQPR | <i>Equisetum pratense</i> | 5-5-5 | 100 | 22.4 |
| LYAN2 | <i>Lycopodium annotinum</i> | 3-3-3 | 100 | 17.3 |
| RALA | <i>Ranunculus lapponicus</i> | 1-1-1 | 100 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 10-10-10 | 100 | 31.6 |
| RUCH | <i>Rubus chamaemorus</i> | 10-10-10 | 100 | 31.6 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 35-35-35 | 100 | 59.2 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-5-5 | 100 | 22.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-1-1 | 100 | 10.0 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 40-40-40 | 100 | 63.2 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-5-5 | 100 | 22.4 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 10-10-10 | 100 | 31.6 |
| BENE4 | <i>Betula neoalaskana</i> | 1-1-1 | 100 | 10.0 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 7-7-7 | 100 | 26.5 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea mariana</i> | 94-126-158 | 0.1-0-0.1 | 36-39-42 | 2 | B |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Other woody plants | Moose | Summer |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—24-24-24

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana-Betula neoalaskana/Vaccinium uliginosum/Cladonia*

Ecological Classification ID: F231XY162AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Hills, mountains

Slope (percent): Min Max
1 70

Elevation (feet): Min Max
1,148 2,953

Range of Aspect Direction: All aspects

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: High

Frost-Free Days: Min Max
20 110

Mean Annual Precipitation (inches): Low High
10 25

Mean Annual Air Temperature (°F): Low High
23 28

Monthly Data:

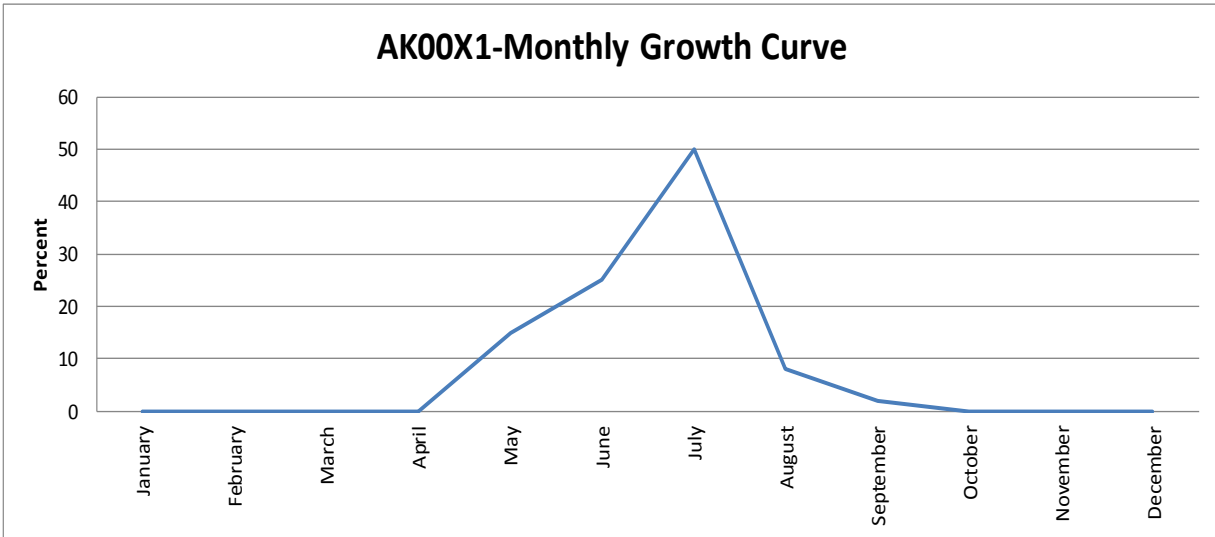
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH3—D31-Boreal woodland gravelly residual slopes
 D31OF1—D31-Boreal woodland rocky colluvial slopes
 D31TH1—D31-Boreal taiga gravelly colluvial slopes

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Dominant Parent Material: Organic material over loess over gravelly colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 3 12 20

pH: Low RV High
 3.4 5.4 7.7

Effective CEC (me/100g): Low High
 12.6 40

CEC (me/100g): Min RV Max
 3.1 25.9 62


Organic Matter (percent): Low RV High
 2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 1 1.46


Plant Community Phases

| | | | |
|--|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY162AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is on summits, shoulders, and backslopes of mountains and hills at all aspects and commonly is in convex positions. Because of the varying landscape positions, slope varies substantially (1 to 60%). The soils are rocky and do not have permafrost. The climax phase community typically has a minimal organic layer (<15 cm. thick). The soils in community phase 1.1 are classified as Haplocryepts and are composed of organic matter over loess and/or gravelly colluvium. The climax phase community is characterized by black spruce woodland with ericaceous shrub and lichen understory.</p> <p>Fire resulted in four documented phases. Fire is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. High-severity fire events are more typical than low-severity fire events. Low-severity and high-severity fire events appear to cause differences in the depth of the organic material on the soil surface and the present and potential vegetation.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div>Boreal woodland gravelly slopes cold</div><div>F231XY162AK</div><div><div><div>1.1 (HCPC) Black spruce-mixed ericaceous shrub-lichen woodland</div><div>1.2 (2FL) Black spruce-paper birch-mixed ericaceous shrub-lichen woodland regeneration</div><div>1.3 (2FM) Paper birch-black spruce-mixed ericaceous-feathermoss-lichen forest</div><div>1.4 (2FE) Paper birch-mixed shrub-mixed herbaceous-moss woodland regeneration</div></div><div><div>1.1a</div><div>1.2a</div><div>1.2b</div><div>1.3a</div><div>1.3b</div><div>1.4a</div><div>1.4b</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |


| | |
|------------------|---|
| State Narrative: | <p>Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event and the severity of the burn.</p> <p>Due in part to the lack of permafrost and the thin organic mat, the site tends to be well drained and likely burns hot during a fire event. The typical disturbance is a high-intensity fire regime. During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Many pre-fire species likely regenerate after a fire, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>The fire return interval plays a significant role in the structure of the forest. Longer fire return intervals favor the development of community phase 1.1, and shorter fire return intervals favor development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|------------------|---|

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Black Spruce-Mixed Ericaceous Shrub-Lichen Woodland |


| Community Phase Narrative: | |
|--|---|
| <p>The majority of the tree cover is medium-sized and stunted <i>Picea mariana</i> (total mature tree cover ~20%). Black spruce is the dominant tree species, but <i>Picea glauca</i>, <i>Populus tremuloides</i>, and <i>Betula neoalaskana</i> are also present. The shrub canopy primarily is in the low and dwarf strata (total shrub cover ~60%). Common shrubs include <i>Ledum palustre</i>, <i>Empetrum nigrum</i>, <i>Vaccinium uliginosum</i>, and <i>Vaccinium vitis-idaea</i>. Forbs and graminoids are minor vegetative components. The diversity of lichen is high, and lichen forms an extensive ground cover (~50% cover). Moss is less abundant than lichen, but <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i> are common. Ten observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Fire. Community phase 1.1 has the longest fire return interval. |

| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Black Spruce-Paper Birch-Mixed Ericaceous Shrub-Lichen Woodland Regeneration |

| Community Phase Narrative: | |
|--|--|
| <p>The tree cover is primarily distributed among the medium, stunted, and regenerative tree strata (~15% mature cover and 15% seedling cover). The dominant tree species are <i>Picea mariana</i> and <i>Betula neoalaskana</i>, but <i>Picea glauca</i> and <i>Populus tremuloides</i> are also present. Shrubs are evenly distributed between the low and dwarf shrub strata (total shrub cover ~60%). Common shrubs are <i>Ledum palustre</i>, <i>Vaccinium uliginosum</i>, <i>Empetrum nigrum</i>, and <i>Vaccinium vitis-idaea</i>. Forbs and graminoids are minor vegetative components. The diversity of lichen is high, and lichen forms an abundant ground cover (~45% cover). Moss also forms ground cover (~35% cover). Four observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. |
| 1.2b | Normal time and growth without fire. Deciduous trees become less abundant and black spruce seedlings mature and form a black spruce woodland. The fire return interval is presumed to be shorter than that of phase 1.1 and longer than that of phase 1.4. |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Paper birch-black spruce-mixed ericaceous shrub-feathermoss-lichen forest |

| Community Phase Narrative: | |
|---|--|
| <p>The tree cover is primarily distributed between the medium and regenerative tree strata. The dominant medium-sized trees are <i>Populus tremuloides</i> and <i>Betula neoalaskana</i>, and the dominant regenerative tree is <i>Picea mariana</i>. Shrubs are dominant in the understory (total shrub cover ~45%). Common shrubs are <i>Vaccinium vitis-idaea</i>, <i>Vaccinium uliginosum</i>, and <i>Rosa acicularis</i>. Graminoids and forbs are minor vegetative components. Lichen and moss are evenly distributed in the ground cover (combined cover ~40%). Seven observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Fire. |
| 1.3b | Normal time and growth without fire. Deciduous trees begin to become less abundant, and black spruce seedlings grow and it begins to become dominant. The fire return interval is presumed to be shorter than that of phase 1.2 and longer than that of phase 1.4. |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.4 |  | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Paper birch-Mixed Herbaceous-Moss Woodland Regeneration |

| Community Phase Narrative: | |
|--|--|
| <p>The majority of the tree cover is a mixture of regenerating <i>Populus tremuloides</i> and <i>Betula neoalaskana</i>. The forb, graminoid, and lichen cover is less abundant in this phase than in the other phases. A common shrub is <i>Salix sp.</i>, a common graminoid is <i>Calamagrostis canadensis</i>, and a common forb is <i>Chamerion angustifolium</i>. Moss is an abundant ground cover (~40%). Five observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.4a | Normal time and growth without fire. High-severity burns occur. Deciduous trees continue to outpace growth of black spruce, and they eventually become dominant in the stand. |
| 1.4b | Normal time and growth without fire. A transition from phase 1.3 is believed to occur on this ecological site, which might result from low-severity fires. Site conditions might favor more growth of black spruce and less dominance of deciduous trees. This phase might occur in areas where fire disturbances do not expose large areas of mineral soil. |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
52 65 93

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
0 2.7 7

Texture: Channery silt loam, silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.21 0.31 0.4

pH: Min RV Max
5.1 5.6 6.4

Subsurface Layer

Thickness (cm): Min RV Max
52 62.2 86

Texture: Gravelly silt loam, very gravelly loam, extremely gravelly sandy loam, silt loam, extremely channery silt loam, extremely channery sandy loam

AWC (cm/cm): Min RV Max
0.03 0.16 0.24

pH: Min RV Max
5.5 6.2 6.7

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 0-50 | 5-80 | 4-50 | 5-35 | 0-10 | 0-15 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GD (<4 inches) | 20-20 | --- | --- | --- |
| GM (4-24 inches) | 5-5 | --- | --- | --- |
| GT (>24 inches) | 0.01-1 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-10 | --- | --- |
| FM (4-24 inches) | --- | 0.01-5 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-1 | --- |
| SL (8-36 inches) | --- | --- | 0.01-2 | --- |
| SM (3-10 feet) | --- | --- | 2-2 | --- |
| TR (<15 feet) | --- | --- | --- | 0.01-1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:

Stratum—GD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CACO10 | <i>Carex concinna</i> | 20-20-20 | 11 | 14.9 |

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 2-16.8-40 | 44 | 27.3 |
| CAREX | <i>Carex</i> | 1-6.3-10 | 33 | 14.5 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 0-10-20 | 22 | 14.9 |
| CAPU | <i>Calamagrostis purpurascens</i> | 15-15-15 | 11 | 12.9 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 2-6-10 | 22 | 11.5 |
| SATR5 | <i>Saxifraga tricuspidata</i> | 10-10-10 | 11 | 10.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 1-15.2-40 | 44 | 26.0 |
| PELA | <i>Pedicularis labradorica</i> | 10-10-10 | 11 | 10.5 |
| EQSC | <i>Equisetum scirpoides</i> | 10-10-10 | 11 | 10.5 |
| GELI2 | <i>Geocaulon lividum</i> | 1-2.7-5 | 33 | 9.4 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 5-9.5-15 | 44 | 20.5 |
| POAL11 | <i>Polygonum alpinum</i> | 2-4.3-8 | 33 | 12.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 0-6.9-30 | 89 | 24.7 |
| ARUV | <i>Arctostaphylos uva-ursi</i> | 2-18.5-35 | 22 | 20.3 |
| EMNI | <i>Empetrum nigrum</i> | 3-4-5 | 22 | 9.4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 1-3.3-8 | 78 | 16.0 |
| VAUL | <i>Vaccinium uliginosum</i> | 0-3-6 | 56 | 12.9 |
| ROAC | <i>Rosa acicularis</i> | 0-4-7 | 33 | 11.6 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 8-8-8 | 11 | 9.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SALIX | <i>Salix</i> | 3-6-10 | 44 | 16.3 |
| SABE2 | <i>Salix bebbiana</i> | 2-6-10 | 22 | 11.5 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 1-11.9-20 | 78 | 30.4 |
| BENE4 | <i>Betula neoalaskana</i> | 4-7-10 | 67 | 21.6 |
| PIMA | <i>Picea mariana</i> | 0-3.6-10 | 89 | 18.0 |
| PIGL | <i>Picea glauca</i> | 0-2.7-7 | 33 | 9.4 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 1-7-15 | 33 | 15.3 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea mariana</i> | 89-92-94 | 3.7-5-5.5 | 22-23-24 | 2 | B |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Severe use | | | Summer |
| Slight use | | Dall sheep | Spring |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: *Cerastium maximum*

Species Richness: Number of stops—9; plant species per stop (min-avg-max)—16-23-30

Community Phase 2FM



Rooting Depth (cm): Min Avg Max
39 61.2 88

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min Avg Max
2 6.3 19

Texture: Slightly decomposed plant material

AWC (cm/cm): Min Avg Max
0.35 0.35 0.35

pH: Min Avg Max
4.4 5.1 6

Subsurface Layer

Thickness (cm): Min Avg Max
37 54.9 69

Texture: Gravelly coarse sand, gravelly coarse sandy loam, gravelly loam, gravelly silt loam, very gravelly coarse sandy loam, very cobbly fine sandy loam, very cobbly loamy coarse sand, very gravelly silt loam, very gravelly sandy loam, extremely gravelly loamy coarse sand, extremely gravelly sandy loam, very channery silt loam, loam, silt loam, extremely channery sandy loam, fine sandy loam

AWC (cm/cm): Min Avg Max
0.02 0.14 0.25

pH: Min Avg Max
4.3 5.6 7.3

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-40 | 2-70 | 30-75 | 1-25 | 0-10 | 0-1 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 5-5 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-0.01 | --- | --- |
| FM (4-24 inches) | --- | 0.01-5 | --- | --- |
| SD (<8 inches) | --- | --- | 15-5 | --- |
| SL (8-36 inches) | --- | --- | 0.01-3 | --- |
| ST (>10 feet) | --- | --- | 5-5 | --- |
| TR (<15 feet) | --- | --- | --- | 35-40 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 10-12.5-15 | 22 | 16.7 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| LYCO3 | <i>Lycopodium complanatum</i> | 0-1.6-5 | 56 | 9.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 1-4.7-10 | 33 | 12.5 |
| CHAN9 | <i>Chamerion angustifolium</i> | 10-10-10 | 11 | 10.5 |
| MEPA | <i>Mertensia paniculata</i> | 0-3-7 | 33 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| POAL11 | <i>Polygonum alpinum</i> | 15-15-15 | 11 | 12.9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------|---------------------------------|------------------|----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-12-25 | 78 | 30.6 |
| ARRU | <i>Arctostaphylos rubra</i> | 60-60-60 | 11 | 25.8 |
| EMNI | <i>Empetrum nigrum</i> | 1-5.5-15 | 44 | 15.6 |
| LIBO3 | <i>Linnaea borealis</i> | 15-15-15 | 11 | 12.9 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-7.5-10 | 22 | 12.9 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| ARUV | <i>Arctostaphylos uva-ursi</i> | 5-11.7-20 | 33 | 19.7 |
| ROAC | <i>Rosa acicularis</i> | 0-3.7-10 | 78 | 17.0 |
| VAUL | <i>Vaccinium uliginosum</i> | 0.1-4-10 | 56 | 14.9 |
| RITR | <i>Ribes triste</i> | 20-20-20 | 11 | 14.9 |
| LEGR | <i>Ledum groenlandicum</i> | 1-6-10 | 33 | 14.1 |
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 2-5.7-10 | 33 | 13.7 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 15-15-15 | 11 | 12.9 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| BEOC2 | <i>Betula occidentalis</i> | 10-10-10 | 11 | 10.5 |
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 3-4-5 | 22 | 9.4 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 7-8.5-10 | 22 | 13.7 |
| SABE2 | <i>Salix bebbiana</i> | 3-4-5 | 22 | 9.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 2-14.4-35 | 100 | 38.0 |
| POTR5 | <i>Populus tremuloides</i> | 0.1-8.7-40 | 67 | 24.1 |
| BENE4 | <i>Betula neoalaskana</i> | 2-6.8-15 | 67 | 21.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 1-16.8-35 | 67 | 33.5 |
| BEOC2 | <i>Betula occidentalis</i> | 40-40-40 | 11 | 21.1 |
| PIMA | <i>Picea mariana</i> | 1-5.6-15 | 78 | 20.8 |
| POTR5 | <i>Populus tremuloides</i> | 15-17.5-20 | 22 | 19.7 |

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Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|----------------------------|---------------------------------|------------------|-----------------------------------|
| POTR5 | <i>Populus tremuloides</i> | 20-20-20 | 11 | 14.9 |
| BENE4 | <i>Betula neoalaskana</i> | 15-15-15 | 11 | 12.9 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> <u>Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------------|
| <i>Betula neoalaskana</i> | --- | 2.5-3-3.7 | 22-25-32 | 6 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 12-27.3-60 | 6 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—9; plant species per stop (min-avg-max)—16-21.9-27

Community Phase 2FL



| <u>Rooting Depth (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|----------------------------|------------|-----------|------------|
| | 57 | 59 | 61 |

Restrictive Features: None recorded

Drainage Class: Well drained

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Surface Layer

Thickness (cm): Min RV Max
3 3 3

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.8 5.2 5.7

Subsurface Layer

Thickness (cm): Min RV Max
54 56 58

Texture: Gravelly fine sandy loam, gravelly silt loam, gravelly sandy loam, very gravelly coarse sandy loam, extremely gravelly loamy sand

AWC (cm/cm): Min RV Max
0.04 0.13 0.22

pH: Min RV Max
5.1 5.8 6.3

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 25-75 | 5-75 | 5-40 | 0-20 | 0-1 | 0-2 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-2 | --- | --- | --- |
| FD (<4 inches) | --- | 1-2 | --- | --- |
| SD (<8 inches) | --- | --- | 3-3 | --- |
| SL (8-36 inches) | --- | --- | 10-10 | --- |
| SM (3-10 feet) | --- | --- | 15-5 | --- |
| TR (<15 feet) | --- | --- | --- | 2-5 |
| TS (<15 feet) | --- | --- | --- | 5-5 |
| TM (15-40 feet) | --- | --- | --- | 25-25 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 1-8.7-15 | 33 | 17.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| LYCL | <i>Lycopodium clavatum</i> | 2-6.3-15 | 33 | 14.5 |
| GELI2 | <i>Geocaulon lividum</i> | 1-4.5-10 | 44 | 14.1 |
| LYAN2 | <i>Lycopodium annotinum</i> | 0.1-3.8-8 | 44 | 13.0 |
| LYCO3 | <i>Lycopodium complanatum</i> | 2-5-10 | 33 | 12.9 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 1-3.8-8 | 56 | 14.5 |
| POAL11 | <i>Polygonum alpinum</i> | 2-6-10 | 22 | 11.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 3-12.2-25 | 89 | 33.0 |
| EMNI | <i>Empetrum nigrum</i> | 2-10.7-20 | 67 | 26.7 |
| RUCH | <i>Rubus chamaemorus</i> | 2-6-10 | 22 | 11.5 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 1-5.5-10 | 22 | 11.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 5-19.5-40 | 44 | 29.4 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 10-25-45 | 33 | 28.9 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-6.9-12 | 78 | 23.1 |
| SPST3 | <i>Spiraea stevenii</i> | 0-5-15 | 44 | 14.9 |
| ROAC | <i>Rosa acicularis</i> | 0-2.7-10 | 67 | 13.4 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 15-15-15 | 11 | 12.9 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 1-8.5-15 | 44 | 19.4 |
| BEOC2 | <i>Betula occidentalis</i> | 5-10-15 | 22 | 14.9 |
| SABE2 | <i>Salix bebbiana</i> | 0.1-5.1-10 | 22 | 10.6 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 0-10.9-35 | 100 | 33.0 |
| BENE4 | <i>Betula neoalaskana</i> | 0-4.1-20 | 89 | 19.2 |
| PIGL | <i>Picea glauca</i> | 2-6-10 | 22 | 11.5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 15-17.5-20 | 22 | 19.7 |
| BENE4 | <i>Betula neoalaskana</i> | 15-15-15 | 11 | 12.9 |
| POTR5 | <i>Populus tremuloides</i> | 2-3-5 | 33 | 10.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 2-10.2-25 | 67 | 26.0 |
| BENE4 | <i>Betula neoalaskana</i> | 2-4.8-7 | 56 | 16.3 |
| PIGL | <i>Picea glauca</i> | 15-15-15 | 11 | 12.9 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 1.2-2-2.8 | 7-10-12 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 4-25.4-62 | 5 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Forbs, ferns, and | Moose | Unknown |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | | Unknown |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: *Salix candida*

Species Richness: Number of stops—9; plant species per stop (min-avg-max)—16-29.4-47

Community Phase HCPC



Rooting Depth (cm): Min RV Max
66 73.5 81

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
3 3.5 4

Texture: Sandy loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.15 0.28 0.35

pH: Min RV Max
3.6 4 4.3

Subsurface Layer

Thickness (cm): Min RV Max
63 70 77

Texture: Very gravelly sandy loam, extremely gravelly sandy loam, very channery silt loam, extremely channery loam, extremely channery loamy coarse sand

AWC (cm/cm): Min RV Max
0.02 0.11 0.24

pH: Min RV Max
4.6 5.1 6

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 30-90 | 5-65 | 2-25 | 2-15 | 0-5 | 0-10 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-1 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-5 | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 10-5 | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TS (<15 feet) | --- | --- | --- | 1-20 |
| TM (15-40 feet) | --- | --- | --- | 5-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 2-4-7 | 40 | 12.6 |
| CABI5 | <i>Carex bigelowii</i> | 15-15-15 | 10 | 12.2 |
| CACA4 | <i>Calamagrostis canadensis</i> | 5-6.5-8 | 20 | 11.4 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 5-6.7-10 | 30 | 14.1 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| POAL11 | <i>Polygonum alpinum</i> | 2-3-5 | 30 | 9.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 2-10.7-30 | 100 | 32.7 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 3-9.1-15 | 100 | 30.2 |
| ARRU | <i>Arctostaphylos rubra</i> | 3-6.5-10 | 20 | 11.4 |
| LOPR | <i>Loiseleuria procumbens</i> | 10-10-10 | 10 | 10.0 |
| DROC | <i>Dryas octopetala</i> | 10-10-10 | 10 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 5-15.8-40 | 90 | 37.7 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-27.5-70 | 40 | 33.2 |
| LEGR | <i>Ledum groenlandicum</i> | 1-12.2-25 | 50 | 24.7 |
| ARUV | <i>Arctostaphylos uva-ursi</i> | 10-10-10 | 10 | 10.0 |
| BENA | <i>Betula nana</i> | 5-5-5 | 20 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SALIX | <i>Salix</i> | 7-9.7-12 | 30 | 17.0 |
| BENA | <i>Betula nana</i> | 15-15-15 | 10 | 12.2 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 3-6.5-10 | 20 | 11.4 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 3-6.5-10 | 20 | 11.4 |
| ROAC | <i>Rosa acicularis</i> | 2-4.5-7 | 20 | 9.5 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| BEOC2 | <i>Betula occidentalis</i> | 20-20-20 | 10 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-9-15 | 100 | 30.0 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 20 | 10.0 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 15-22-45 | 50 | 33.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-17.3-40 | 60 | 32.2 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-8.7-15 | 30 | 16.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 61-102-164 | 4.1-8-11.7 | 21-46-62 | 4 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 4-24.3-50 | 7 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Other | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: *Arnica lonchophylla*

Species Richness: Number of stops—10; plant species per stop (min-avg-max)—15-26.5-37

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca/Betula glandulosa-Empetrum nigrum*

Ecological Classification ID: F231XY164AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Hills, mountains

Slope (percent): Min Max
1 60

Elevation (feet): Min Max
2,625 3,281

Range of Aspect Direction: All aspects

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: High

Frost-Free Days: Min Max
20 110

Mean Annual Precipitation (inches): Low High
11 25

Mean Annual Air Temperature (°F): Low High
21 28

Monthly Data:

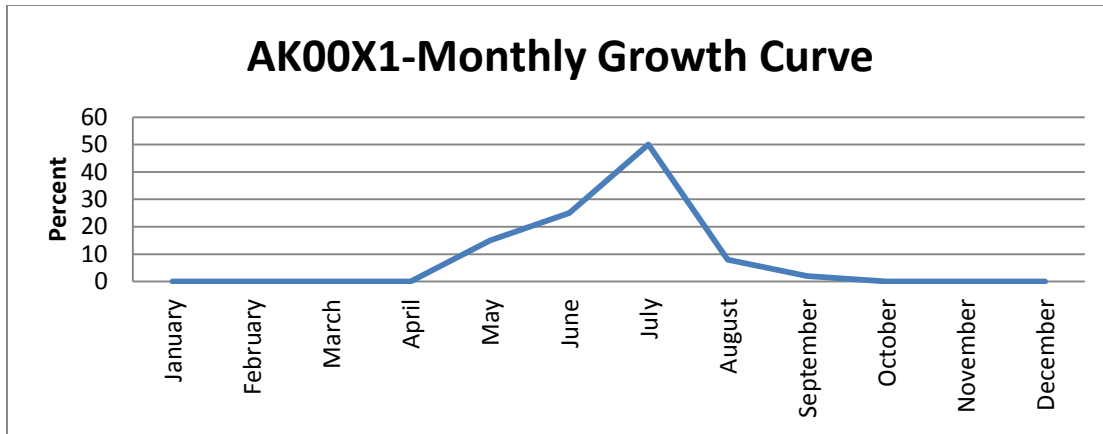
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH7—D31-Subalpine woodland rocky colluvial slopes

D31CF1—D31-Subalpine woodland rocky residual slopes

Characteristics of Representative Soil Components

Soil Classification: Fragmental, mixed Typic Haplocryepts; loamy-skeletal, mixed, superactive Typic Dystrocryepts

Dominant Parent Material: Organic material over gravelly colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Fragmental, loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 1 6 12

pH: Low RV High
 3.2 5.2 6.7

Effective CEC (me/100g): Low High
 10.1 32

CEC (me/100g): Min RV Max
 3.6 24.4 62


Organic Matter (percent): Low RV High
 1 22.4 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 0.8 1.37

Plant Community Phases

| | | | |
|---|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY164AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This subalpine ecological site is on summits, shoulders, and backslopes of mountains at high elevations (slopes range from 2 to 57%; elevation ranges from 800 to 1,000 meters). The slope shape generally is convex, and the soils are drier than those of sites in concave positions (e.g., F231XY140AK). The tree cover in the climax phase is generally <25% and is limited in large part due to the cold microclimate. The soils are rocky and commonly have exposed rock fragments. The soils in community phase 1.1 are classified as Dystrocrypts or Haplocrypts and are composed of organic matter over gravelly colluvium. The communities are similar to those of site F231XY139AK, but this site has a higher abundance of tree cover, which might be because of the slightly lower elevations.</p> <p>Fire is a documented disturbance regime resulting in three observed phases. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. High-severity fire events are believed to be more typical on this site than low-severity fire events. Low-severity and high-severity fire events appear to cause differences in the depth of the organic material on the soil surface and the present and potential vegetation.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div>Subalpine woodland gravelly slopes dry</div><div>F231XY164AK</div><div><div>1.1 (HCPC) White spruce-scrub birch-mixed dwarf scrub-lichen woodland</div><div>1.1b</div><div>1.2 (2FL) White spruce-paper birch-scrub birch-lichen woodland</div><div>1.2b</div><div>1.1a</div><div>1.2a</div><div>1.3 (2FE) Scrub birch-bluejoint-fireweed-moss scrubland</div><div>1.3a</div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |

| | |
|------------------|--|
| State Narrative: | <p>For the climax phase, the dominant vegetation is a mixture of trees, shrubs, and lichen. The tree cover is sporadic and is primarily in the medium tree stratum. The site is considered woodland (10 to 25% tree cover).</p> <p>Fire completely removed the tree canopy. Because the early phase vegetation is a mixture of broadleaf tree regeneration and herbaceous plants, the disturbance was likely a high-severity fire event. This fire likely consumed much of the organic mat, exposing mineral soils. Many pre-fire species likely regenerate post-fire, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>In interior Alaska, the dominant subalpine tree species is <i>Picea glauca</i>. As <i>Picea glauca</i> establishes after fire from offsite seed sources, the fire return interval likely plays a substantial role in controlling the abundance of white spruce cover. Areas with a shorter fire return interval will likely have less long-term coniferous tree cover than areas with a longer fire return interval.</p> <p>The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches. The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet.</p> |
|------------------|--|


| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-scrub birch-mixed dwarf scrub-lichen woodland |

| Community Phase Narrative: | |
|---|---|
| <p>The tree canopy is primarily medium-sized trees with a few regenerating, stunted, and tall trees. <i>Betula neoalaskana</i> and <i>Picea mariana</i> are present, but the most common tree species is <i>Picea glauca</i> (total mature tree cover ~15%). In this phase, <i>Picea glauca</i> averages 79 years of age (ranges from 31 to 147 years). The most abundant medium shrubs are <i>Betula glandulosa</i> and <i>Betula occidentalis</i>, and the most abundant dwarf shrubs are <i>Vaccinium vitis-idaea</i> and <i>Empetrum nigrum</i>. Graminoids and forbs are a minor vegetative component. The lichen cover is nearly twice as abundant as the moss cover (primarily <i>fruticose/foliose</i> lichen and feathermoss). The diversity of lichen is high (13 species), but no individual species is abundant. Common species include <i>Stereocaulon tomentosum</i>, <i>Cladina sp.</i>, and <i>Cladonia sp.</i></p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | High-intensity fire. The climax sites generally are well drained and have a thin organic layer (<15 cm. thick). The high-intensity fire likely consumed much of the organic mat, exposing mineral soils. |
| 1.1b | Low-intensity fire or spot fire. A low-intensity or spot fire likely results in a community that resembles a late fire phase community. After a low-severity burn, some shrubs and graminoids can quickly recolonize and become dominant as a result of below-ground root reserves that are not consumed during the fire event. |

| | |
|-----------|--|
| Phase 1.2 |  |
|-----------|--|

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| | | | |
|--|--|-----------------------|--|
| Community Phase Number: | 1.2 | Community Phase Name: | White spruce-paper birch-scrub birch-lichen woodland |
| Community Phase Narrative: | | | |
| <p>The majority of the tree canopy is a mixture of medium and regenerating <i>Betula neoalaskana</i> and <i>Picea glauca</i>. <i>Picea glauca</i> averages 69 years of age (ranges from 27 to 101 years). Shrubs are abundant, typically exceeding 50% cover, and are evenly distributed in the medium, low, and dwarf shrub strata. The most abundant medium shrubs are <i>Betula glandulosa</i> and <i>Betula occidentalis</i>, the most abundant low shrubs are <i>Betula glandulosa</i> and <i>Vaccinium uliginosum</i>, and the most abundant dwarf shrubs are <i>Vaccinium vitis-idaea</i> and <i>Empetrum nigrum</i>. Graminoids and forbs are a minor vegetative component. The lichen cover is nearly twice as abundant as the moss cover (primarily <i>fruticose/foliose</i> lichen and feathermoss). The diversity of lichen is high (19 species), but no individual species are abundant. Common species include <i>Stereocaulon tomentosum</i>, <i>Cladina</i> sp., and <i>Flavocetraria cucullata</i>. Four observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Fire. | | |
| 1.2b | Normal time and growth without fire disturbance. The late and climax phases were grouped in large part due to the typical size/age of the trees and the presence of broadleaf tree species. Over time, the abundance of broadleaf tree species decreases and that of <i>Picea glauca</i> increases. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.3. | | |

| | | | |
|--|--|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Scrub birch-bluejoint-fireweed-moss scrubland |
| Community Phase Narrative: | | | |
| <p>The tree canopy consists of regenerating <i>Betula neoalaskana</i> at low densities. As compared to the climax and late fire phases, the shrub cover is limited and is primarily in the medium shrub stratum. The dominant shrub is <i>Betula glandulosa</i>. As compared to the climax and late fire phases, the graminoid and forb cover is high. The most abundant graminoid is <i>Calamagrostis Canadensis</i>, and most abundant forb is <i>Chamerion angustifolium</i>. Fire appears to greatly reduce the overall lichen cover and increase the overall moss cover. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Normal time and growth without fire. Paper birch and spruce develop into a mixed woodland. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
70 70 70

Restrictive Features: None recorded

Drainage Class: Somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
6 6 6

Texture: Moderately decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4 4 4

Subsurface Layer

Thickness (cm): Min RV Max
64 64 64

Texture: Channers, very channery sandy loam, loam, silt loam

AWC (cm/cm): Min RV Max
0.13 0.19 0.25

pH: Min RV Max
5.2 5.2 5.3

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-1 | 93-93 | 20-20 | 5-5 | 1-1 | 5-5 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-15 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-2 | --- | --- |
| FT (>24 inches) | --- | 1-20 | --- | --- |
| SD (<8 inches) | --- | --- | 2-5 | --- |
| SL (8-36 inches) | --- | --- | 0.1-25 | --- |
| SM (3-10 feet) | --- | --- | 0.1-1 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 100 | 38.7 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| LUAR2 | <i>Lupinus arcticus</i> | 2-2-2 | 100 | 14.1 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 20-20-20 | 100 | 44.7 |
| POAL11 | <i>Polygonum alpinum</i> | 1-1-1 | 100 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-5-5 | 100 | 22.4 |
| ARRU | <i>Arctostaphylos rubra</i> | 2-2-2 | 100 | 14.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 25-25-25 | 100 | 50.0 |
| ROAC | <i>Rosa acicularis</i> | 1-1-1 | 100 | 10.0 |
| LEGR | <i>Ledum groenlandicum</i> | 1-1-1 | 100 | 10.0 |

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Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 1-1-1 | 100 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 100 | 22.4 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Other woody plants | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—23-23-23

Community Phase 2FL



Rooting Depth (cm): Min RV Max
53 59.3 65

Restrictive Features: None recorded

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Drainage Class: Somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
3 3.7 4

Texture: Channery silt loam, moderately decomposed plant material, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.2 0.31 0.35

pH: Min RV Max
3.4 4.9 6.6

Subsurface Layer

Thickness (cm): Min RV Max
50 55.7 61

Texture: Very gravelly loam, very gravelly sandy loam, channers, very channery silt loam, extremely channery silt loam

AWC (cm/cm): Min RV Max
0.08 0.17 0.24

pH: Min RV Max
5.2 6 6.7

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 55-70 | 30-40 | 10-20 | 1-5 | 1-5 | 1-35 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.01-0.01 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-4 | --- | --- |
| SD (<8 inches) | --- | --- | 1-4 | --- |
| SL (8-36 inches) | --- | --- | 2-2 | --- |
| SM (3-10 feet) | --- | --- | 10-15 | --- |
| TR (<15 feet) | --- | --- | --- | 2-2 |
| TS (<15 feet) | --- | --- | --- | 10-10 |
| TM (15-40 feet) | --- | --- | --- | 10-5 |
| TT (>40 feet) | --- | --- | --- | 2-2 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| HAL3 | <i>Hierochloe alpina</i> | 7-7-7 | 25 | 13.2 |
| CAREX | <i>Carex</i> | 0-2-3 | 75 | 12.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| LYAN2 | <i>Lycopodium annotinum</i> | 0.1-2.4-4 | 75 | 13.3 |
| LYCL | <i>Lycopodium clavatum</i> | 2-2.5-3 | 50 | 11.2 |
| SATR5 | <i>Saxifraga tricuspidata</i> | 5-5-5 | 25 | 11.2 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| LUAR2 | <i>Lupinus arcticus</i> | 4-4-4 | 25 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 4-10-25 | 100 | 31.6 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 0.1-5.8-15 | 100 | 24.0 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 1-5.8-10 | 100 | 24.0 |
| DROC | <i>Dryas octopetala</i> | 10-10-10 | 25 | 15.8 |
| SAAR27 | <i>Salix arctica</i> | 5-5-5 | 25 | 11.2 |
| LOPR | <i>Loiseleuria procumbens</i> | 1-2.5-4 | 50 | 11.2 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| B EGL | <i>Betula glandulosa</i> | 1-7-15 | 75 | 22.9 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-4.5-8 | 100 | 21.2 |
| LEGR | <i>Ledum groenlandicum</i> | 10-10-10 | 25 | 15.8 |
| SPST3 | <i>Spiraea stevenii</i> | 3-4-5 | 50 | 14.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| BEOC2 | <i>Betula occidentalis</i> | 5-10-15 | 100 | 31.6 |
| B EGL | <i>Betula glandulosa</i> | 15-15-15 | 25 | 19.4 |
| SAGL | <i>Salix glauca</i> | 10-10-10 | 25 | 15.8 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 2-6.8-10 | 100 | 26.0 |
| BENE4 | <i>Betula neoalaskana</i> | 2-8.5-15 | 50 | 20.6 |

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Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 25 | 15.8 |
| PIGL | <i>Picea glauca</i> | 8-8-8 | 25 | 14.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-8-15 | 100 | 28.3 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 25 | 11.2 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 3.6-4-3.8 | 12-13-14 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 16-21.7-29 | 3 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Tree regeneration | Moose | Summer |

Notable Plants: *Arnica mollis*

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—29-35.2-41

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 32 49.8 66

Restrictive Feature: Paralithic rock

Drainage Class: Somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
 0 2.8 6

Texture: Silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.25 0.33 0.35

pH: Min RV Max
 3.8 4.5 5.5

Subsurface Layer

Thickness (cm): Min RV Max
 32 47 60

Texture: Bedrock, gravelly coarse sandy loam, gravelly silt loam, very gravelly coarse sandy loam, very cobbly silt loam, very gravelly silt loam, extremely cobbly silt loam, channers, extremely gravelly coarse sand, extremely gravelly coarse sandy loam, extremely gravelly loamy coarse sand, channery sandy loam, extremely gravelly silt loam, extremely paragravelly loamy coarse sand, very channery silt loam, extremely channery sandy loam, coarse sandy loam, very flaggy silt loam, very fine sandy loam

AWC (cm/cm): Min RV Max
 0.02 0.15 0.25

pH: Min RV Max
 4.5 5.6 6.6

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 25-80 | 5-35 | 15-60 | 0-7 | 0-3 | 0-25 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| SD (<8 inches) | --- | --- | 3-4 | --- |
| SL (8-36 inches) | --- | --- | 3-5 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TS (<15 feet) | --- | --- | --- | 5-5 |
| TM (15-40 feet) | --- | --- | --- | 10-10 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| FEBR | <i>Festuca brachyphylla</i> | 10-10-10 | 11 | 10.5 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 10-10-10 | 11 | 10.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| LUAR2 | <i>Lupinus arcticus</i> | 1-4.3-7 | 33 | 12.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 3-11-20 | 100 | 33.2 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-7.4-10 | 89 | 25.6 |
| LOPR | <i>Loiseleuria procumbens</i> | 3-7-10 | 44 | 17.6 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 0-6.7-10 | 33 | 14.9 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-4.3-6 | 33 | 12.0 |
| DROC | <i>Dryas octopetala</i> | 10-10-10 | 11 | 10.5 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 2-6-12 | 67 | 20.0 |
| LEGR | <i>Ledum groenlandicum</i> | 1-6.3-15 | 33 | 14.5 |
| B EGL | <i>Betula glandulosa</i> | 4-4.7-5 | 33 | 12.5 |
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 22 | 10.5 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 3-4-5 | 22 | 9.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| BEOC2 | <i>Betula occidentalis</i> | 10-15.7-25 | 78 | 35.0 |
| B EGL | <i>Betula glandulosa</i> | 2-12-20 | 67 | 28.3 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 1-2.8-7 | 44 | 11.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-3.9-7 | 100 | 19.7 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-6.7-10 | 33 | 14.9 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-12.1-25 | 100 | 34.8 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 31-80-147 | 1.9-5-9.1 | 7-24-36 | 21 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 8-16.2-30 | 7 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Tree regeneration | Moose | Spring |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: *Poa porsildii*

Species Richness: Number of stops—9; plant species per stop (min-avg-max)—15-25.4-40

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum*

Ecological Classification ID: F231XY169AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Pingos on terraces, terraces, alluvial fans

Slope (percent): Min Max
0 25

Elevation (feet): Min Max
666 1,604

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max
0 25

Flooding: None

Ponding: Frequency Duration
Frequent Very long

Runoff: Low

Frost-Free Days: Min Max
50 110

Mean Annual Precipitation (inches): Low High
9 21

Mean Annual Air Temperature (°F): Low High
23 28

Monthly Data:

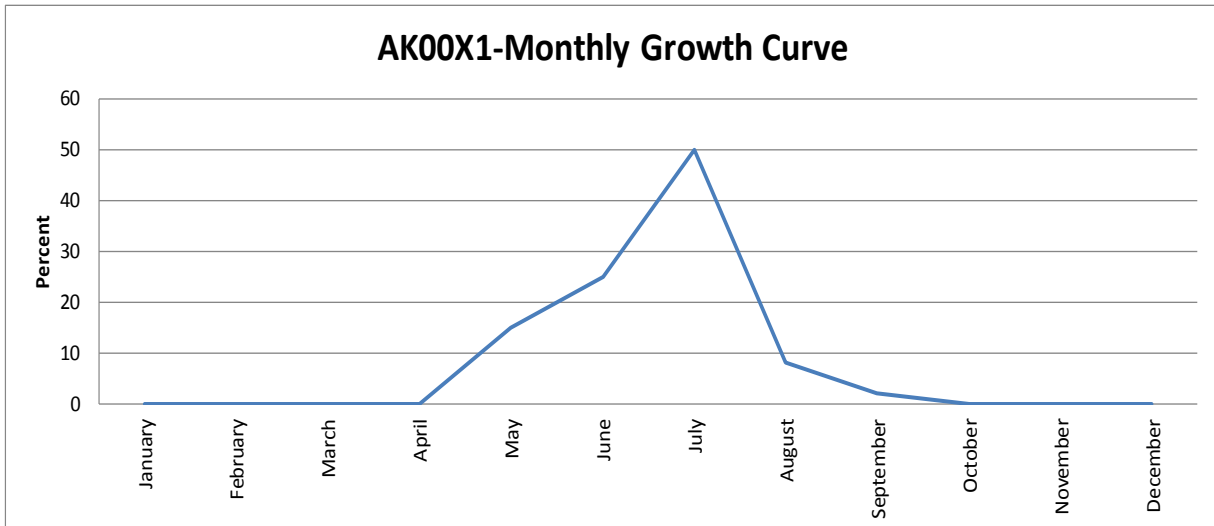
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH5—D31-Boreal taiga/tussock organic terraces, frozen
 D31TE1—D31-Boreal taiga/tussock organic terraces, frozen
 D31TE2—D31-Boreal taiga/tussock organic terraces, frozen
 D31UC4—D31-Boreal taiga/tussock organic terraces, frozen
 D31YV2—D31-Boreal taiga/tussock organic terraces, frozen
 D31YV3—D31-Boreal taiga/tussock organic terraces, frozen

Characteristics of Representative Soil Components

Soil Classification: Loamy, mixed, euic, subgelic Terric Fibristsels

Dominant Parent Material: Organic material over silty cryoturbate

Representative Surface Texture: Peat

Subsurface Texture Group: Loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 15 30 59

pH: Low RV High
 3.8 6.2 7.4

Effective CEC (me/100g): Low High
 19.3 50

CEC (me/100g): Min RV Max
 10 27.3 62

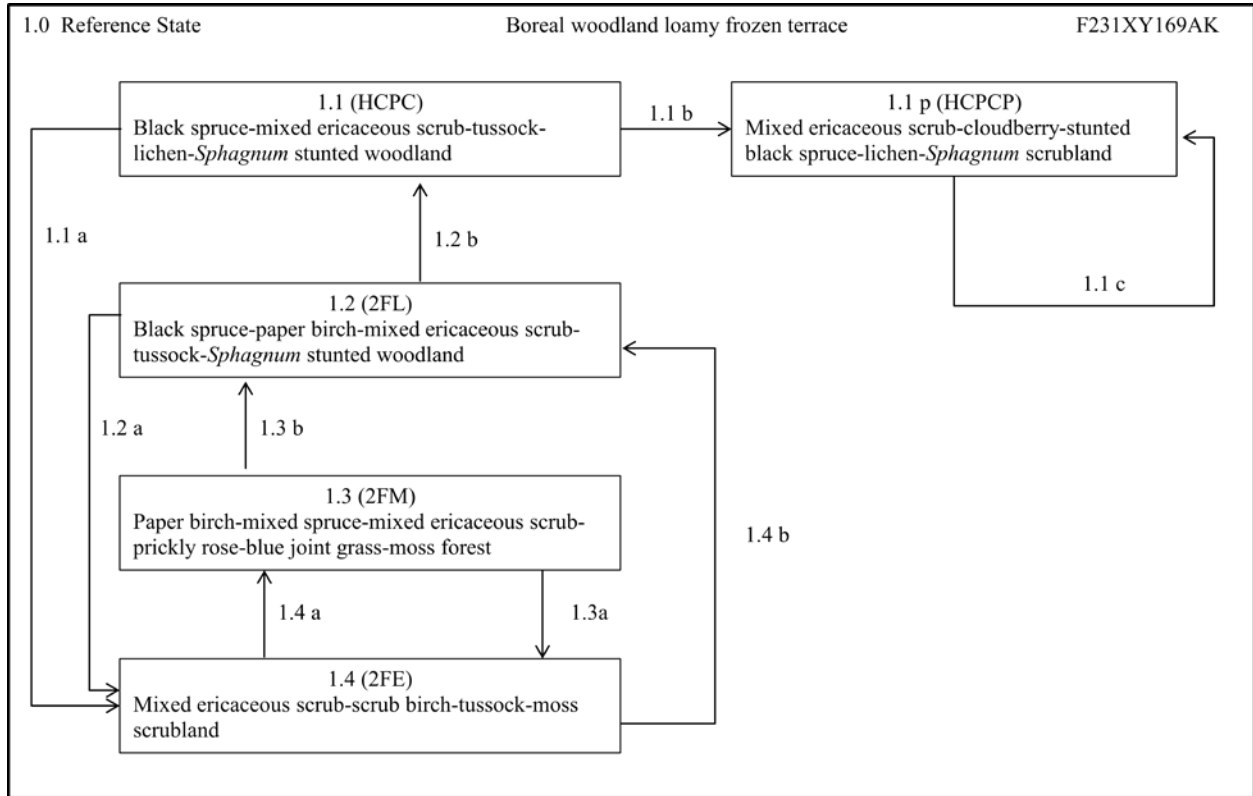
Organic Matter (percent): Low RV High
 2 28 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 0.8 1.12

Plant Community Phases

| | |
|--|-------------|
| Ecological Site Description ID: | F231XY169AK |
| Ecological Dynamics of the Site: | |
| <p>This boreal ecological site is in flat areas of flood plain terraces (slope generally <5%). The soils in community phase 1.1 are classified as Fibristels and consist of thick organic material over cryoturbated silt or loam (organic mat commonly >50 cm. thick). The soils typically are saturated and commonly are ponded, likely due to the thick organic mat and shallow depth to permafrost. The climax phase community is characterized as stunted black spruce woodland with a thick mat of Sphagnum moss.</p> <p>Fire resulted in five documented phases. Fire is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. Low-severity fire events are more typical than high-severity fire events on this site. Low-severity and high-severity fire events appear to cause differences in the depth of the organic material on the soil surface, the presence and/or depth to permafrost, and the present and potential vegetation.</p> <p>It is presumed that sites not affected by fire for long periods of time eventually dominantly support a mat of Sphagnum moss. The organic material becomes so thick and contains enough moisture that a fire event would not necessarily reset the community to an early fire sere (phase 1.4). Communities that support dominantly Sphagnum moss have a less productive black spruce forest and thus are considered to be post-climax communities.</p> | |

State and Transition Diagram:



State and Transition Diagram:

1

State Name:

Reference


State Narrative:

Phases in the reference state were grouped on the basis of the structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event and the severity of the burn.

During a low-severity fire, minimal proportions of the organic mat are consumed and mineral soils typically are not exposed. Permafrost typically remains in the soil profile, and water commonly perches above it. Graminoids and scrubs quickly recolonize and become dominant as a result of below-ground root reserves that were not consumed during the fire event. Because black spruce has semi-serotinous cones, it quickly reestablishes after fire events. With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.2.

During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost commonly drops out of the soil profile, and the sites become drier. Many pre-fire species likely regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow). With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.3.

| | |
|--|---|
| | <p>The fire return interval plays a significant role in the structure of the forest. Longer fire return intervals favor the development of community phases 1.1 and 1.1P, and shorter fire return intervals favor the development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|--|---|


| | | | |
|--|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Black Spruce-Mixed Ericaceous Scrub-Tussock-Lichen-Sphagnum Stunted Woodland |
| Community Phase Narrative: | | | |
| <p>The tree cover is evenly distributed among the medium, stunted, and regenerative strata (total mature tree cover ~15%). <i>Picea mariana</i> is the dominant tree species. The majority of the shrub cover is in the low and dwarf strata (total shrub cover ~60%). Common shrub species include <i>Ledum palustre</i>, <i>Rubus chamaemorus</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids are prevalent (~20% cover), and the most common species are <i>Eriophorum vaginatum</i> and <i>Eriophorum angustifolium</i>. Forbs are a minor vegetative component. Moss (~60% cover) and lichen (~25% cover) form an expansive ground cover. Common species are <i>Sphagnum</i> sp. and <i>Cladina</i> sp. Twenty-seven observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|---|
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Fire. |
| 1.1b | Normal time and growth without fire disturbance. Ericaceous scrubs and Sphagnum moss become dominant in the understory and the content of surface organic matter increases. Tree and graminoid cover decreases. Areas are wetter and less productive. |

| | |
|------------|---|
| Phase 1.1p |  |
|------------|---|

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| | | | |
|---|--|-----------------------|--|
| Community Phase Number: | 1.1p | Community Phase Name: | Mixed Ericaceous Scrub-Cloudberry-Stunted Black Spruce-Lichen-Sphagnum Scrubland |
| Community Phase Narrative: | | | |
| <p>The tree cover is evenly distributed between the stunted and regenerative strata (total mature tree cover ~5%). <i>Picea mariana</i> is the dominant tree species. The majority of the shrub cover is in the low and dwarf strata (total shrub cover ~85%). Common shrubs include <i>Ledum palustre</i>, <i>Rubus chamaemorus</i>, <i>Betula nana</i>, <i>Vaccinium vitis-idaea</i>, <i>Vaccinium uliginosum</i>, <i>Empetrum nigrum</i>, and <i>Chamaedaphne calyculata</i>. Graminoids, forbs, and lichen are minor vegetative components. Sphagnum moss forms an expansive ground cover (total moss cover ~85%; Sphagnum moss cover ~65%). Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1c | <p>Fire. This pathway was not observed in the field, but it was believed that fire in this post-climax community typically would not reset the succession. Post-climax communities have such a thick layer of organic matter that fire does not create a condition suitable for the competitive release of graminoids or trees. The transition results in a community that supports dominantly scrubs and Sphagnum moss.</p> | | |

| | | | |
|-----------------|--|-----------|--|
| Phase 1.2 |  | | |
| Community Phase | 1.2 | Community | Black Spruce-Paper Birch-Mixed Ericaceous Scrub- |


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| | | | |
|--|---|-------------|-----------------------------------|
| Number: | | Phase Name: | Tussock-Sphagnum Stunted Woodland |
| Community Phase Narrative: | | | |
| <p>In this community phase, remnants of charred trees are common. The tree cover is evenly distributed among the medium, stunted, and regenerative strata (total mature tree cover was 15%). The dominant tree species is <i>Picea mariana</i>, but <i>Betula neoalaskana</i> and <i>Picea glauca</i> are also present. Shrubs are in the medium, low, and dwarf strata (total shrub cover ~90%). Common shrubs include <i>Ledum palustre</i>, <i>Betula glandulosa</i>, <i>Rubus chamaemorus</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids are abundant (~50% cover), and common species include <i>Carex bigelowii</i> and <i>Eriophorum vaginatum</i>. Lichen and forbs are minor vegetative components. Moss forms an expansive ground cover (~50% cover) and includes feathermoss and <i>Sphagnum sp.</i> Twenty-six observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Fire. | | |
| 1.2b | Normal time and growth without fire. The shrub and graminoid cover decreases, and the Sphagnum moss cover increases. The tree cover remains fairly constant. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.4. | | |

| | |
|-----------|--|
| Phase 1.3 |  |
|-----------|--|

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| | | | |
|---|---|-----------------------|---|
| Community Phase Number: | 1.3 | Community Phase Name: | Paper Birch-Mixed Spruce-Mixed Ericaceous Scrub-Prickly Rose-Blue Joint Grass-Moss Forest |
| Community Phase Narrative: | | | |
| <p>This phase is characterized by an extensive paper birch community. The tree cover is primarily in the medium and regenerative strata (total mature tree cover ~40%). <i>Betula neoalaskana</i> is the dominant species, but <i>Picea glauca</i> and <i>Picea mariana</i> are also common. Shrubs are in the medium, low, and dwarf strata (total shrub cover ~80%). Common shrubs include <i>Alnus viridis</i>, <i>Ledum palustre</i>, <i>Rosa acicularis</i>, <i>Rubus chamaemorus</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids (~25% cover) and forbs (~20% cover) are abundant, and common species include <i>Calamagrostis canadensis</i> and <i>Equisetum</i> sp. Moss forms an extensive ground cover (~40% cover) that is a mixture of feathermoss and Sphagnum moss. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Fire. Community phase 1.3 typically has much less surface organic matter than do community phases 1.2 and 1.1. Fire on community phase 1.3 might be more likely to expose mineral soils, resulting in site conditions that are more suitable to the re-establishment of broadleaf trees. | | |
| 1.3b | Normal time and growth without fire event. Permafrost moves upward into the soil profile, and eventually paper birch is replaced by a black spruce, ericaceous scrub, and Sphagnum moss community. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.4. | | |

| | | | |
|--|--|-----------------------|---|
| Phase 1.4 |  | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Mixed Ericaceous Scrub-Scrub Birch-Tussock-Moss Scrubland |
| Community Phase Narrative: | | | |
| <p>Standing charred trees are common. The tree cover typically is minimal (total mature tree cover ~2%). The shrub cover is primarily in the low and dwarf strata (total shrub cover ~75%). Common shrubs include <i>Ledum palustre</i>, <i>Vaccinium vitis-idaea</i>, <i>Betula nana</i>, <i>Rubus chamaemorus</i>, and <i>Vaccinium uliginosum</i>. Graminoids are abundant (~60% cover). Common species include <i>Carex bigelowii</i> and <i>Eriophorum vaginatum</i>. Forbs and lichen are minor vegetative components. Moss is abundant (~40% cover) and is primarily feathermoss and Sphagnum moss. Twenty-seven observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|---|
| Pathway Number: | Pathway Name & Description: |
| 1.4a | Normal time and growth without fire. This pathway is the result of a high-intensity fire regime. Shrub, feathermoss, and paper birch likely all increase in abundance. |
| 1.4b | Normal time and growth without fire. This pathway is the result of a low-intensity fire regime. Graminoids decrease, and black spruce, scrub, and Sphagnum moss increase. |

Dynamic Soil Properties within Representative Rooting Depth
Community Phase 2FE



Rooting Depth (cm): Min RV Max
 8 58.1 140

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 8 35.6 60

Texture: Highly decomposed plant material, mucky peat, peat

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AWC (cm/cm): Min RV Max
0.35 0.35 0.4

pH: Min RV Max
3.4 5.1 7.4

Subsurface Layer

Thickness (cm): Min RV Max
0 22.4 80

Texture: Permanently frozen loam, gravelly sandy loam, permanently frozen silt loam, permanently frozen very fine sandy loam, silt loam, very fine sandy loam

AWC (cm/cm): Min RV Max
0.12 0.25 0.35

pH: Min RV Max
5 6.2 7.3

Influencing Water Features

NWI Code: PEM1, PSS3, PSS1, PFO4

NWI Description: Palustrine, Emergent, Persistent; Palustrine, Forested, Needle-Leaved Evergreen; Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; Palustrine, Scrub-Shrub, Broad-Leaved Evergreen

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris ≥1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|--|------------------|-----------------------------------|--------------------------|
| 0-30 | 15-85 | 3-70 | 0-20 | 0-20 | 0-0 | 0-15 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GD (<4 inches) | 1-1 | --- | --- | --- |
| GM (4-24 inches) | 15-15 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.01-2 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-2 | --- |
| SL (8-36 inches) | --- | --- | 0.01-7 | --- |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 2-33.8-80 | 67 | 47.5 |
| CABI5 | <i>Carex bigelowii</i> | 1-19.4-50 | 63 | 35.0 |
| ERBR6 | <i>Eriophorum brachyantherum</i> | 10-31.7-70 | 11 | 18.8 |
| CAMIM | <i>Carex microchaeta ssp. microchaeta</i> | 70-70-70 | 4 | 16.1 |
| ERIOP | <i>Eriophorum</i> | 65-65-65 | 4 | 15.5 |
| ERAN6 | <i>Eriophorum angustifolium</i> | 1-25.5-50 | 7 | 13.7 |
| CAREX | <i>Carex</i> | 0.1-10.5-20 | 15 | 12.5 |
| CARO7 | <i>Carex rotundata</i> | 25-25-25 | 4 | 9.6 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 20-45-70 | 7 | 18.3 |
| CAST10 | <i>Carex stylosa</i> | 75-75-75 | 4 | 16.7 |
| CABI5 | <i>Carex bigelowii</i> | 50-50-50 | 4 | 13.6 |
| CACA4 | <i>Calamagrostis canadensis</i> | 2-4.8-8 | 19 | 9.4 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 0.1-4.7-20 | 26 | 11.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 0.1-8.7-30 | 93 | 28.4 |
| RUCH | <i>Rubus chamaemorus</i> | 0.1-5-15 | 89 | 21.2 |
| ANPO | <i>Andromeda polifolia</i> | 1-5.4-20 | 30 | 12.6 |
| VAOX | <i>Vaccinium oxycoccos</i> | 0-2.1-10 | 63 | 11.6 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 0.1-5.5-15 | 15 | 9.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 2-25.8-50 | 74 | 43.7 |
| BENA | <i>Betula nana</i> | 5-16.7-40 | 67 | 33.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-9.4-65 | 74 | 26.3 |
| SAPU15 | <i>Salix pulchra</i> | 1-9-25 | 52 | 21.6 |
| BEGL | <i>Betula glandulosa</i> | 0-11.2-30 | 41 | 21.3 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 2-7.8-15 | 44 | 18.6 |
| LEGR | <i>Ledum groenlandicum</i> | 2-11.2-25 | 19 | 14.4 |

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Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|-------------------------------------|---------------------------------|------------------|-----------------------------------|
| BENA | <i>Betula nana</i> | 4-16.3-30 | 11 | 13.5 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 1-10.2-25 | 15 | 12.3 |
| B EGL | <i>Betula glandulosa</i> | 10-12.5-15 | 7 | 9.6 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|---------------------------------|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 0-4.6-20 | 85 | 19.7 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|---------------------------------|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 1-4.3-15 | 26 | 10.5 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> <u>Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------------|
| <i>Picea glauca</i> | 61-62-63 | 0.9-2-3.5 | 4-11-18 | 2 | G |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 0-0-0 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Moose | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Caribou | Unknown |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | | Unknown |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Summer |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—27; plant species per stop (min-avg-max)—12-21.7-35

Community Phase 2FM



Rooting Depth (cm): Min RV Max
 64 69 74

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 9 9.5 10

Texture: Peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 3.8 4.3 4.7

Subsurface Layer

Thickness (cm): Min RV Max
 55 59.5 64

Texture: Gravelly loam, loam, silt loam

AWC (cm/cm): Min RV Max
 0.2 0.22 0.24

pH: Min RV Max
 5.4 5.6 5.8

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 4-15 | 20-80 | 18-55 | 8-25 | 0-0 | 0-0 | 0-5 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-5 | --- | --- | --- |
| GT (>24 inches) | 2-2 | --- | --- | --- |
| FD (<4 inches) | --- | 1-1 | --- | --- |
| FM (4-24 inches) | --- | 10-10 | --- | --- |
| SD (<8 inches) | --- | --- | 10-25 | --- |
| SL (8-36 inches) | --- | --- | 0.1-5 | --- |
| SM (3-10 feet) | --- | --- | 5-5 | --- |
| TR (<15 feet) | --- | --- | --- | 10-55 |
| TM (15-40 feet) | --- | --- | --- | 5-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 20-20-20 | 33 | 25.8 |
| CAREX | <i>Carex</i> | 15-15-15 | 33 | 22.4 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 5-5-5 | 33 | 12.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 2-16-30 | 67 | 32.7 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 8-8-8 | 33 | 16.3 |
| EQSC | <i>Equisetum scirpoides</i> | 3-3-3 | 33 | 10.0 |
| PYGR | <i>Pyrola grandiflora</i> | 3-3-3 | 33 | 10.0 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| EQPR | <i>Equisetum pratense</i> | 30-30-30 | 33 | 31.6 |
| EQSY | <i>Equisetum sylvaticum</i> | 10-10-10 | 33 | 18.3 |
| PEFRF | <i>Petasites frigidus</i> var. <i>frigidus</i> | 8-8-8 | 33 | 16.3 |
| COPA28 | <i>Comarum palustre</i> | 5-5-5 | 33 | 12.9 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-16.7-25 | 100 | 40.8 |
| RUCH | <i>Rubus chamaemorus</i> | 10-10-10 | 67 | 25.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 5-35-65 | 67 | 48.3 |
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 5-15-35 | 100 | 38.7 |
| LEGR | <i>Ledum groenlandicum</i> | 7-7-7 | 33 | 15.3 |
| RIHU | <i>Ribes hudsonianum</i> | 6-6-6 | 33 | 14.1 |
| SPST3 | <i>Spiraea stevenii</i> | 3-3-3 | 33 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 20-20-20 | 33 | 25.8 |
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 5-7.5-10 | 67 | 22.4 |
| SALIX | <i>Salix</i> | 15-15-15 | 33 | 22.4 |
| SAPU15 | <i>Salix pulchra</i> | 5-5-5 | 33 | 12.9 |
| RITR | <i>Ribes triste</i> | 5-5-5 | 33 | 12.9 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 5-30-55 | 67 | 44.7 |
| PIMA | <i>Picea mariana</i> | 5-11.7-20 | 100 | 34.2 |
| PIGL | <i>Picea glauca</i> | 10-10-10 | 33 | 18.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 5-23.3-40 | 100 | 48.3 |
| PIGL | <i>Picea glauca</i> | 30-30-30 | 33 | 31.6 |
| PIMA | <i>Picea mariana</i> | 10-10-10 | 33 | 18.3 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-5-5 | 33 | 12.9 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 33 | 12.9 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|---------------------------|
| <i>Picea mariana</i> | 51-51-51 | 3-3-3 | 27-27-27 | 1 | G |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 34-34-34 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other | Other | Unknown |
| Slight use | Other woody plants | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—16-23-29

Community Phase 2FL



Rooting Depth (cm): Min RV Max
7 49.9 112

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

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Thickness (cm): Min RV Max

21 35.5 59

Texture: Peat, permanently frozen peat

AWC (cm/cm): Min RV Max

0.35 0.35 0.35

pH: Min RV Max

3.4 4.6 6.1

Subsurface Layer

Thickness (cm): Min RV Max

-14 14.4 53

Texture: Permanently frozen silt loam, silt loam

AWC (cm/cm): Min RV Max

0.24 0.25 0.25

pH: Min RV Max

5.5 6.4 7.2

Influencing Water Features

NWI Code: PFO4, PSS1, PSS3

NWI Description: Palustrine, Forested, Needle-Leaved Evergreen; Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; Palustrine, Scrub-Shrub, Broad-Leaved Evergreen

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-40 | 6-95 | 4-60 | 0-15 | 0-7 | 0-0 | 0-20 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-7 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-1 | --- | --- |
| FM (4-24 inches) | --- | 3-3 | --- | --- |
| SD (<8 inches) | --- | --- | 1-7 | --- |
| SL (8-36 inches) | --- | --- | 0.01-3 | --- |
| SM (3-10 feet) | --- | --- | 3-5 | --- |
| TR (<15 feet) | --- | --- | --- | 15-15 |
| TS (<15 feet) | --- | --- | --- | 20-20 |
| TM (15-40 feet) | --- | --- | --- | 7-7 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|---|---------------------------------|------------------|-----------------------------------|
| CAREX | <i>Carex</i> | 3-29.7-70 | 22 | 25.7 |
| CABI5 | <i>Carex bigelowii</i> | 1-17.9-40 | 30 | 23.0 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 1-11.7-30 | 41 | 21.9 |
| ERiop | <i>Eriophorum</i> | 15-26.2-35 | 15 | 19.7 |
| ERBR6 | <i>Eriophorum brachyantherum</i> | 15-30-45 | 7 | 14.9 |
| ERAN6 | <i>Eriophorum angustifolium</i> | 55-55-55 | 4 | 14.3 |
| CAMIM | <i>Carex microchaeta ssp. microchaeta</i> | 45-45-45 | 4 | 12.9 |
| CAAQ | <i>Carex aquatilis</i> | 25-25-25 | 4 | 9.6 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|---------------------------------|---------------------------------|------------------|-----------------------------------|
| CAREX | <i>Carex</i> | 20-56.7-90 | 11 | 25.1 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 60-72.5-85 | 7 | 23.2 |
| CACA4 | <i>Calamagrostis canadensis</i> | 0-18.8-70 | 15 | 16.7 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------------------|---------------------------------|------------------|-----------------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-10.2-25 | 85 | 29.5 |
| RUCH | <i>Rubus chamaemorus</i> | 0.1-7.7-35 | 85 | 25.5 |
| ANPO | <i>Andromeda polifolia</i> | 1-12.4-30 | 26 | 18.0 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 15-32.5-50 | 7 | 15.5 |
| VAOX | <i>Vaccinium oxycoccos</i> | 0.1-2.5-8 | 78 | 13.9 |
| EMNI | <i>Empetrum nigrum</i> | 2-10.4-20 | 19 | 13.9 |
| ARRU | <i>Arctostaphylos rubra</i> | 0.1-4.6-15 | 26 | 10.9 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 1-10.3-25 | 11 | 10.7 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------------------|---------------------------------|------------------|-----------------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-21.7-80 | 85 | 42.9 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 0.1-15.8-55 | 52 | 28.6 |
| BENA | <i>Betula nana</i> | 3-9.8-20 | 59 | 24.0 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-7.4-20 | 74 | 23.4 |
| B EGL | <i>Betula glandulosa</i> | 5-13-25 | 22 | 17.0 |
| MYGA | <i>Myrica gale</i> | 0.1-15.7-40 | 11 | 13.2 |
| SAPU15 | <i>Salix pulchra</i> | 1-4.3-15 | 41 | 13.2 |
| LEGR | <i>Ledum groenlandicum</i> | 7-11.8-20 | 15 | 13.2 |
| SAIN3 | <i>Salix interior</i> | 30-30-30 | 4 | 10.5 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 10-12.5-15 | 7 | 9.6 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------------------|---------------------------------|------------------|-----------------------------------|
| BEGL | <i>Betula glandulosa</i> | 3-21-60 | 22 | 21.6 |
| SAPU15 | <i>Salix pulchra</i> | 2-18.6-45 | 19 | 18.6 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 2-5.3-8 | 33 | 13.3 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 30-30-30 | 4 | 10.5 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 3-7.7-15 | 11 | 9.2 |
| SAAR3 | <i>Salix arbusculoides</i> | 5-7.3-10 | 11 | 9.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|---------------------------|---------------------------------|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 1-8.9-22 | 81 | 26.9 |
| BENE4 | <i>Betula neoalaskana</i> | 0.1-3.7-5 | 22 | 9.0 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|---------------------------------|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 1-15.2-60 | 63 | 31.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|---------------------------------|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 0.1-14-40 | 48 | 26.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> <u>Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------------|
| <i>Picea mariana</i> | 68-92-114 | 0.8-3-4.9 | 12-24-38 | 8 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 2-34.2-55 | 4 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|---------------------|
| Moderate use | Willows | Moose | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Moose | Summer |
| Slight use | Other | Other | Unknown |
| Slight use | Other woody plants | Other | Specialized system, |
| Slight use | Other woody plants | Other | Summer |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—27; plant species per stop (min-avg-max)—15-24.4-32

Community Phase HCPC



Rooting Depth (cm): Min RV Max
15 56.8 96

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
15 33.4 48

Texture: Peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
2.9 4.4 7.5

Subsurface Layer

Thickness (cm): Min RV Max
0 23.4 48

Texture: Permanently frozen mucky peat, permanently frozen silt loam, silt loam, mucky silt loam

AWC (cm/cm): Min RV Max
0.15 0.26 0.4

pH: Min RV Max
3.9 6.5 8.2

Influencing Water Features

NWI Code: PFO4, PSS1, PSS3, PSS4, PEM1

NWI Description: Palustrine, Emergent, Persistent; Palustrine, Forested, Needle-Leaved Evergreen;
Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; Palustrine, Scrub-Shrub, Broad-Leaved Evergreen;
Palustrine, Scrub-Shrub, Needle-Leaved Evergreen

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-85 | 25-95 | 0-65 | 0-10 | 0-1 | 0-0 | 0-5 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-15 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-1 | --- | --- |
| FM (4-24 inches) | --- | 1-1 | --- | --- |
| SD (<8 inches) | --- | --- | 1-5 | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-0.1 |
| TS (<15 feet) | --- | --- | --- | 25-25 |
| TM (15-40 feet) | --- | --- | --- | 1-1 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 0.1-8.4-35 | 56 | 21.5 |
| ERAN6 | <i>Eriophorum angustifolium</i> | 20-40-65 | 11 | 21.1 |
| CABI5 | <i>Carex bigelowii</i> | 0.1-11.6-40 | 37 | 20.7 |
| CAREX | <i>Carex</i> | 3-13.2-20 | 15 | 14.0 |
| ERIOP | <i>Eriophorum</i> | 7-11.8-15 | 15 | 13.2 |
| ERBR6 | <i>Eriophorum brachyantherum</i> | 30-30-30 | 4 | 10.5 |
| CACA4 | <i>Calamagrostis canadensis</i> | 0.1-3.5-10 | 30 | 10.2 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 15-17.5-20 | 7 | 11.4 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 0.1-6.3-15 | 15 | 9.7 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------------|--|------------------|-----------------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-8.4-30 | 93 | 28.0 |
| RUCH | <i>Rubus chamaemorus</i> | 0.1-8.5-20 | 89 | 27.4 |
| EMNI | <i>Empetrum nigrum</i> | 0.1-6.9-20 | 26 | 13.3 |
| ARRU | <i>Arctostaphylos rubra</i> | 0.1-7.2-15 | 22 | 12.6 |
| VAOX | <i>Vaccinium oxycoccos</i> | 0.1-1.7-10 | 78 | 11.5 |
| ANPO | <i>Andromeda polifolia</i> | 0.1-2.7-5 | 33 | 9.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------------------|--|------------------|-----------------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 1-18.5-40 | 89 | 40.5 |
| VAUL | <i>Vaccinium uliginosum</i> | 0-6.8-20 | 63 | 20.7 |
| LEGR | <i>Ledum groenlandicum</i> | 5-23.8-40 | 15 | 18.8 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 0.1-6.9-20 | 41 | 16.8 |
| BENA | <i>Betula nana</i> | 0-5.3-15 | 44 | 15.4 |
| BEGL | <i>Betula glandulosa</i> | 2-6.1-10 | 30 | 13.5 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| BENA | <i>Betula nana</i> | 10-20-30 | 7 | 12.2 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 0.1-12.7-30 | 93 | 34.3 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 5-17.8-35 | 56 | 31.4 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> <u>(Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|--|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 0.1-8.9-25 | 70 | 25.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> <u>Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------------|
| <i>Picea mariana</i> | 53-97-238 | 1.2-3-7.4 | 5-20-39 | 30 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 0-13.6-20 | 9 |

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Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | | | Winter |
| Slight use | Grasses and sedges | Caribou | Spring |
| Slight use | Grasses and sedges | Moose | Unknown |
| Slight use | Grasses and sedges | Other | Summer |
| Slight use | Other | | Unknown |
| Slight use | Other | Moose | Unknown |
| Slight use | Other woody plants | Moose | Spring |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Other woody plants | Other | |
| Slight use | Other woody plants | Other | Specialized system |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—27; plant species per stop (min-avg-max)—13-25-42

Community Phase HCPCP



Rooting Depth (cm): Min RV Max
 45 49.5 54

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Surface Layer

Thickness (cm): Min RV Max
45 45 45

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.6 4.1 4.4

Subsurface Layer

Thickness (cm): Min RV Max
0 4.5 9

Texture: Permanently frozen silt loam

AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
6.7 6.7 6.7

Influencing Water Features

NWI Code: PFO4, PSS3

NWI Description: Palustrine, Forested, Needle-Leaved Evergreen; Palustrine, Scrub-Shrub, Broad-Leaved Evergreen

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 7-25 | 75-95 | 10-15 | 0-5 | 0-0 | 0-0 | 0-1 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 5-8 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-3 | --- | --- |
| FM (4-24 inches) | --- | 0.01-0.01 | --- | --- |
| SD (<8 inches) | --- | --- | 10-7 | --- |
| SL (8-36 inches) | --- | --- | 0.01-5 | --- |
| TR (<15 feet) | --- | --- | --- | 2-2 |
| TS (<15 feet) | --- | --- | --- | 15-15 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 15-15-15 | 33 | 22.4 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 0.1-4.1-8 | 67 | 16.4 |
| CABI5 | <i>Carex bigelowii</i> | 0.1-2.6-5 | 67 | 13.0 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| LYAN2 | <i>Lycopodium annotinum</i> | 2-3.3-5 | 100 | 18.3 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| PELA | <i>Pedicularis labradorica</i> | 0-1-3 | 100 | 10.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| RUCH | <i>Rubus chamaemorus</i> | 10-11.7-15 | 100 | 34.2 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 7-9.7-15 | 100 | 31.1 |
| EMNI | <i>Empetrum nigrum</i> | 1-6.3-15 | 100 | 25.2 |
| ANPO | <i>Andromeda polifolia</i> | 15-15-15 | 33 | 22.4 |
| VAOX | <i>Vaccinium oxycoccos</i> | 0.1-2-3 | 100 | 14.3 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 10-21.7-35 | 100 | 46.5 |
| BENA | <i>Betula nana</i> | 8-11-15 | 100 | 33.2 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-7.7-20 | 100 | 27.7 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 3-9-15 | 67 | 24.5 |
| ANPO | <i>Andromeda polifolia</i> | 5-5-5 | 33 | 12.9 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-5-5 | 33 | 12.9 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 2-9-15 | 100 | 30.0 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 10-12.5-15 | 67 | 28.9 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea mariana</i> | 47-66-87 | 1.1-2-2.1 | 5-8-13 | 6 | G |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—24-27.7-30

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana/Vaccinium vitis-idaea-Rosa acicularis*

Ecological Classification ID: F231XY178AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Terraces, alluvial fans

Slope (percent): Min Max

5 30

Elevation (feet): Min Max

886 1,086

Range of Aspect Direction: Northeast to southwest (clockwise)

Water Table Depth (cm): Min Max

5 75

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max

75 110

Mean Annual Precipitation (inches): Low High

10 15

Mean Annual Air Temperature (°F): Low High

25 28

Monthly Data:

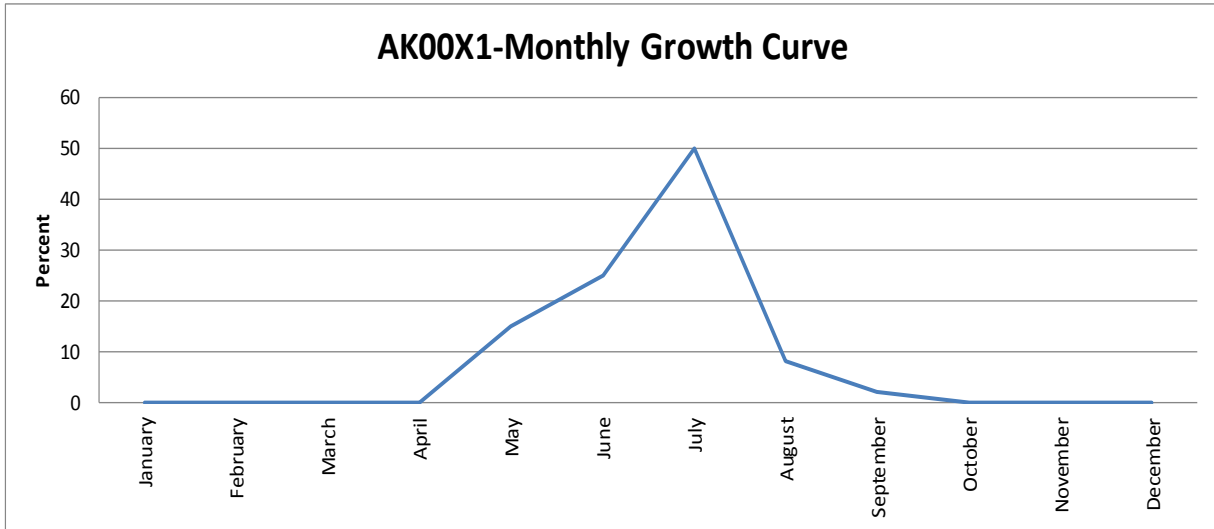
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31TE1—D31-Boreal taiga silty terraces, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, acid, subgelic Fluventic Haplorthels

Dominant Parent Material: Organic material over loamy alluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High

15 27 48

pH: Low RV High

3.4 5.8 7.8

Effective CEC (me/100g): Low High

12.5 40

CEC (me/100g): Min RV Max

4.9 24.2 62

Organic Matter (percent): Low RV High

2 22.5 80

Bulk Density (1/3-Bar): Min RV Max

0.2 0.9 1.33

Plant Community Phases


| | | | |
|---|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY178AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is on moderate slopes of flood plain terraces (slopes >5%). The soils in community phase 1.1 are classified as Haplorthels and are composed of organic matter over loamy alluvium (organic mat commonly >20 cm. thick). As compared to trees on site F231XY169AK, trees on site F231XY178AK are more productive. Productivity likely differs due to the steepness of slope and drainage class of the soils. The steepness of slope appears to favor a fire regime that enables broadleaf tree species to become dominant.</p> <p>Fire resulted in four documented phases. Fire is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. High-severity fire events are more typical than low-severity fire events. Low-severity and high-severity fire events cause differences in the post-fire depth of the organic material on the soil surface, the presence and/or depth to permafrost, and the present and potential vegetation.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div><div><div>Boreal forest loamy frozen terrace</div><div>1.1 (HCPC) Black spruce-mixed ericaceous scrub-lichen-feathermoss forest</div></div><div><div>1.2 (2FL) Black spruce-paper birch-mixed low scrub-mixed forb-feathermoss forest</div><div>1.3 (2FM) Paper birch-mixed ericaceous scrub-mixed forb forest</div><div>1.4 (2FE) Mixed ericaceous scrub-willow-scrub birch-tussock-feathermoss scrubland</div></div></div><div><div>1.2 b</div><div>1.3 b</div><div>1.4 a</div><div>1.3 a</div><div>1.1 a</div><div>1.2 a</div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |

| | |
|-------------------------|---|
| <p>State Narrative:</p> | <p>Phases in the reference state are grouped on the basis of the structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event and the severity of the burn.</p> <p>During a low-severity fire, minimal proportions of the organic mat are consumed and mineral soils typically are not exposed. Permafrost typically remains in the soil profile, and water commonly perches above it. Graminoids and scrubs quickly recolonize and become dominant because of the below-ground root reserves that were not consumed during the fire event. Because black spruce has semi-serotinous cones, it quickly reestablishes after fire events. With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.2.</p> <p>During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost commonly drops out of the soil profile, and the soils become drier. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow). With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|-------------------------|---|

| | |
|------------------|--|
| <p>Phase 1.1</p> |  |
|------------------|--|

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

| | | | |
|---|---|-----------------------|---|
| Community Phase Number: | 1.1 | Community Phase Name: | Black spruce-mixed ericaceous scrub-lichen-feathermoss forest |
| Community Phase Narrative: | | | |
| <p>The tree cover is primarily in the medium and regenerative strata (total mature tree cover ~30%). <i>Picea mariana</i> is the dominant tree species. The majority of the shrub cover is in the low and dwarf strata (total shrub cover ~20%). Common shrub species include <i>Ledum palustre</i>, <i>Rosa acicularis</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids and forbs are minor vegetative components. Lichen (~20%) and moss (~70%) form an extensive ground cover. <i>Pleurozium schreberi</i> and <i>Hylocomium splendens</i> are abundant. Six observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Fire. Communities associated with high-intensity fires. | | |


| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Black spruce-paper birch-mixed low scrub-mixed forb-feathermoss forest |

| Community Phase Narrative: | |
|--|---|
| <p><i>Betula neoalaskana</i> commonly occurs as standing or fallen dead trees, indicating a shift in the dominant vegetation. The tree cover is evenly distributed among the tall, medium, and regenerative strata. <i>Betula neoalaskana</i> and <i>Picea mariana</i> are dominant. The shrub cover is primarily in the low and dwarf strata. Common shrub species include <i>Ledum palustre</i>, <i>Rosa acicularis</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids are a minor vegetative component, but <i>Calamagrostis canadensis</i> is common (~5% cover). Common forbs include <i>Geocaulon lividum</i>, <i>Mertensia paniculata</i>, and <i>Equisetum sylvaticum</i> (combined ~15% cover). <i>Pleurozium schreberi</i> and <i>Hylocomium splendens</i> are abundant (combined ~65% cover). Three observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. |
| 1.2b | Normal time and growth without fire. Lichen cover increases, and graminoid and forb cover decreases. Permafrost moves upward into the soil profile, and eventually paper birch is replaced by black spruce, resulting in a community resembling that of phase 1.1. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.3. |

| | |
|-----------|--|
| Phase 1.3 |  |
|-----------|--|

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| | | | |
|--|---|-----------------------|--|
| Community Phase Number: | 1.3 | Community Phase Name: | Paper birch-mixed ericaceous scrub-mixed forb forest |
| Community Phase Narrative: | | | |
| <p><i>Betula neoalaskana</i> is the dominant tree species (total mature tree cover ~60%). The tree cover is distributed between the medium and regenerative strata. <i>Picea mariana</i> is prevalent in the regenerative stratum. The shrub cover is primarily in the low and dwarf shrub strata (total shrub cover ~60%). Common shrub species include <i>Rosa acicularis</i> and <i>Vaccinium vitis-idaea</i>. Graminoids are a minor vegetative component, but <i>Calamagrostis canadensis</i> is common (~5% cover). Common forbs include <i>Mertensia paniculata</i>, <i>Equisetum</i> sp., and <i>Lycopodium annotinum</i> (combined ~20% cover). Lichen and moss are minor vegetative components. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Fire. Stands of paper birch are less likely to burn and fire is less likely to spread as compared to stands that are dominantly spruce. However, stands of paper birch in the study area have been burned. If phase 1.3 is burned, the resulting community would likely resemble that of phase 1.4. | | |
| 1.3b | Normal time and growth without fire. Shrub cover decreases. Black spruce becomes codominant with paper birch, resulting in a community resembling that of phase 1.2. The fire return interval is presumed to be shorter than that of phase 1.2 but longer than that of phase 1.4. | | |

| | | | |
|---|--|-----------------------|---|
| Phase 1.4 |  | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Mixed ericaceous scrub-willow-scrub birch-tussock-feathermoss scrubland |
| Community Phase Narrative: | | | |
| <p>Charred <i>Picea mariana</i> and <i>Betula neoalaskana</i> are present, but trees are a minor vegetative component (total mature tree cover ~3% cover). The shrub cover is primarily in the low and dwarf shrub strata (total shrub cover ~90%). Common shrub species include <i>Betula nana</i>, <i>Ledum palustre</i>, <i>Vaccinium uliginosum</i>, <i>Salix pulchra</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids are prevalent (~30%). Common species include <i>Carex bigelowii</i>, <i>Eriophorum vaginatum</i>, and <i>Calamagrostis canadensis</i>. Lichen (~15% cover) and moss (~40% cover) form an extensive ground cover. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.4a | <p>Normal time and growth without fire disturbance. Paper birch and black spruce become established and mature. Because paper birch matures faster than black spruce, the resulting community will likely resemble that of phase 1.3. The shrub and graminoid cover decreases. If this phase burns, the resulting community would likely resemble that of phase 1.4.</p> | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
 38 66 94

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 18 25.5 33

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 3.9 3.9 3.9

Subsurface Layer

Thickness (cm): Min RV Max
 20 40.5 61

Texture: Frozen silt loam

AWC (cm/cm): Min RV Max
 0.11 0.12 0.13

pH: Min RV Max
 5.7 5.7 5.7

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 15-15 | 40-40 | 65-65 | 7-7 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-15 | --- | --- | --- |
| GT (>24 inches) | 10-3 | --- | --- | --- |
| FM (4-24 inches) | --- | 7-7 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-20 | --- |
| SL (8-36 inches) | --- | --- | 1-30 | --- |
| TR (<15 feet) | --- | --- | --- | 10-10 |
| TS (<15 feet) | --- | --- | --- | 2-2 |
| TM (15-40 feet) | --- | --- | --- | 1-1 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 15-15-15 | 100 | 38.7 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 10-10-10 | 100 | 31.6 |
| CACA4 | <i>Calamagrostis canadensis</i> | 3-3-3 | 100 | 17.3 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 7-7-7 | 100 | 26.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 20-20-20 | 100 | 44.7 |
| VAOX | <i>Vaccinium oxycoccos</i> | 2-2-2 | 100 | 14.1 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| BENA | <i>Betula nana</i> | 30-30-30 | 100 | 54.8 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 20-20-20 | 100 | 44.7 |
| SAPU15 | <i>Salix pulchra</i> | 10-10-10 | 100 | 31.6 |
| VAUL | <i>Vaccinium uliginosum</i> | 10-10-10 | 100 | 31.6 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 3-3-3 | 100 | 17.3 |
| SPST3 | <i>Spiraea stevenii</i> | 1-1-1 | 100 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 10-10-10 | 100 | 31.6 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 2-2-2 | 100 | 14.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 1-1-1 | 100 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—27-27-27

Community Phase 2FM



Rooting Depth (cm): Min RV Max
 95 95 95

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 5 5 5

Texture: Slightly decomposed plant material, silt loam

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 5.3 5.3 5.3

Subsurface Layer

Thickness (cm): Min RV Max
 90 90 90

Texture: Gravelly silt loam

AWC (cm/cm): Min RV Max
 0.22 0.23 0.24

pH: Min RV Max
 5.4 5.4 5.4

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-5 | 20-20 | 65-65 | 35-35 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-5 | --- | --- | --- |
| FD (<4 inches) | --- | 5-5 | --- | --- |
| FM (4-24 inches) | --- | 10-8 | --- | --- |
| SD (<8 inches) | --- | --- | 30-30 | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| SM (3-10 feet) | --- | --- | 2-2 | --- |
| TR (<15 feet) | --- | --- | --- | 15-25 |
| TM (15-40 feet) | --- | --- | --- | 5-55 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 100 | 22.4 |
| CABI5 | <i>Carex bigelowii</i> | 2-2-2 | 100 | 14.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| LYAN2 | <i>Lycopodium annotinum</i> | 5-5-5 | 100 | 22.4 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 10-10-10 | 100 | 31.6 |
| EQSY | <i>Equisetum sylvaticum</i> | 8-8-8 | 100 | 28.3 |
| EQAR | <i>Equisetum arvense</i> | 3-3-3 | 100 | 17.3 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 30-30-30 | 100 | 54.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 30-30-30 | 100 | 54.8 |
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 100 | 22.4 |
| SAPS | <i>Salix pseudomonticola</i> | 1-1-1 | 100 | 10.0 |

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Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 2-2-2 | 100 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 25-25-25 | 100 | 50.0 |
| PIMA | <i>Picea mariana</i> | 15-15-15 | 100 | 38.7 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 55-55-55 | 100 | 74.2 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 100 | 22.4 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—20-20-20

Community Phase 2FL



Rooting Depth (cm): Min RV Max
 55 78 111

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 5 12.3 19

Texture: Slightly decomposed plant material, silt loam

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 3.8 4.5 4.9

Subsurface Layer

Thickness (cm): Min RV Max
 50 65.7 92

Texture: Permanently frozen loam, gravelly silt loam, permanently frozen sandy loam, extremely gravelly coarse sandy loam, permanently frozen water, loam, silt loam, very fine sandy loam

AWC (cm/cm): Min RV Max
 0.07 0.19 0.25

pH: Min RV Max
 4.7 6.3 7.8

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-10 | 65-75 | 20-40 | 2-25 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 5-5 | --- | --- | --- |
| GT (>24 inches) | 10-2 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.1-10 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-10 | --- |
| SL (8-36 inches) | --- | --- | 2-8 | --- |
| SM (3-10 feet) | --- | --- | 2-5 | --- |
| TR (<15 feet) | --- | --- | --- | 10-2 |
| TM (15-40 feet) | --- | --- | --- | 15-5 |
| TT (>40 feet) | --- | --- | --- | 10-10 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 1-5.5-10 | 67 | 19.1 |
| CAREX | <i>Carex</i> | 5-5-5 | 33 | 12.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 10-10-10 | 33 | 18.3 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 10-10-10 | 67 | 25.8 |
| GELI2 | <i>Geocaulon lividum</i> | 0.1-5-10 | 100 | 22.4 |
| MEPA | <i>Mertensia paniculata</i> | 0.1-5-10 | 100 | 22.4 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 8-9.3-10 | 100 | 30.6 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 0.1-9.4-20 | 100 | 30.6 |
| ROAC | <i>Rosa acicularis</i> | 1-6.3-10 | 100 | 25.2 |
| RITR | <i>Ribes triste</i> | 3-4-5 | 67 | 16.3 |
| SAPU15 | <i>Salix pulchra</i> | 3-3-3 | 33 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-5-5 | 33 | 12.9 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SABE2 | <i>Salix bebbiana</i> | 5-5-5 | 67 | 18.3 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 8-8-8 | 33 | 16.3 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-10-15 | 100 | 31.6 |
| BENE4 | <i>Betula neoalaskana</i> | 0.1-1.7-3 | 100 | 13.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 15-15-15 | 100 | 38.7 |
| BENE4 | <i>Betula neoalaskana</i> | 5-7.3-12 | 100 | 27.1 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 10-16.7-25 | 100 | 40.8 |
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 33 | 18.3 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea mariana</i> | 57-69-82 | 3.6-6-8 | 36-42-45 | 8 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 95-95-95 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—24-25.7-27

Community Phase HCPC



Rooting Depth (cm): Min RV Max
25 71.5 126

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
14 31.2 53

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.6 4.3 5.8

Subsurface Layer

Thickness (cm): Min RV Max
11 40.2 73

Texture: Gravelly loam, extremely gravelly sandy loam, silt loam, sandy loam, fine sandy loam, very fine sandy loam, permanently frozen coarse sandy loam

AWC (cm/cm): Min RV Max
0.08 0.17 0.25

pH: Min RV Max
5.4 6.2 7.6

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-48 | 48-95 | 2-15 | 0-7 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 5-5 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-0.01 | --- | --- |
| FM (4-24 inches) | --- | 1-2 | --- | --- |
| SD (<8 inches) | --- | --- | 1-1 | --- |
| SL (8-36 inches) | --- | --- | 0.01-1 | --- |
| TR (<15 feet) | --- | --- | --- | 15-15 |
| TM (15-40 feet) | --- | --- | --- | 40-40 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 3-4.8-7 | 83 | 20.0 |
| CACA11 | <i>Carex canescens</i> | 5-5-5 | 17 | 9.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 5-5-5 | 17 | 9.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 2-2.5-3 | 33 | 9.1 |
| GELI2 | <i>Geocaulon lividum</i> | 2-2.5-3 | 33 | 9.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-7.7-25 | 100 | 27.7 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 1-15-30 | 83 | 35.4 |
| SPST3 | <i>Spiraea stevenii</i> | 3-4-5 | 33 | 11.5 |
| ROAC | <i>Rosa acicularis</i> | 0-1.8-3 | 67 | 10.8 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 1-5.5-10 | 33 | 13.5 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-12.5-30 | 100 | 35.4 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 17-27.8-40 | 100 | 52.8 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea mariana</i> | 59-94-132 | 1.7-4-8 | 11-24-44 | 14 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 30-50.8-65 | 4 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other | Other | Winter |
| Slight use | Other woody plants | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—21-25.7-32

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca/Rosa acicularis*

Ecological Classification ID: F231XY181AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Hills, escarpments

Slope (percent): Min Max
50 95

Elevation (feet): Min Max
656 2,625

Range of Aspect Direction: Northwest to southeast (clockwise)

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: Very high

Frost-Free Days: Min Max
20 110

Mean Annual Precipitation (inches): Low High
10 25

Mean Annual Air Temperature (°F): Low High
23 28

Monthly Data:

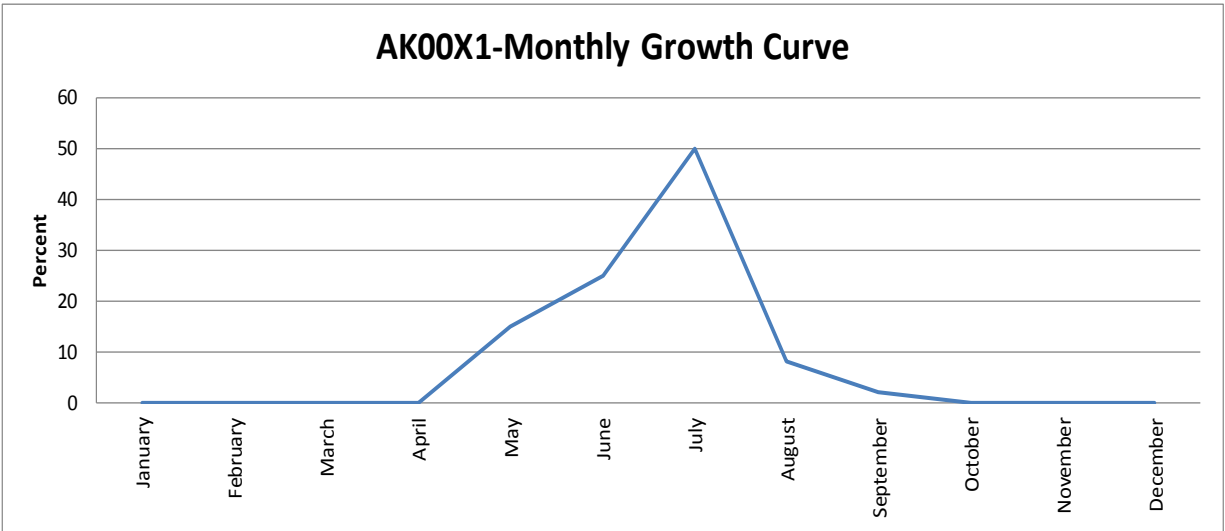
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH6—D31-Boreal forest gravelly colluvial escarpments

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive, nonacid Typic Cryorthents

Dominant Parent Material: Organic material over gravelly colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High

7 9 13

pH: Low RV High

3.4 6.5 8.2

Effective CEC (me/100g): Low High

17.7 40

CEC (me/100g): Min RV Max

3.2 23.7 62

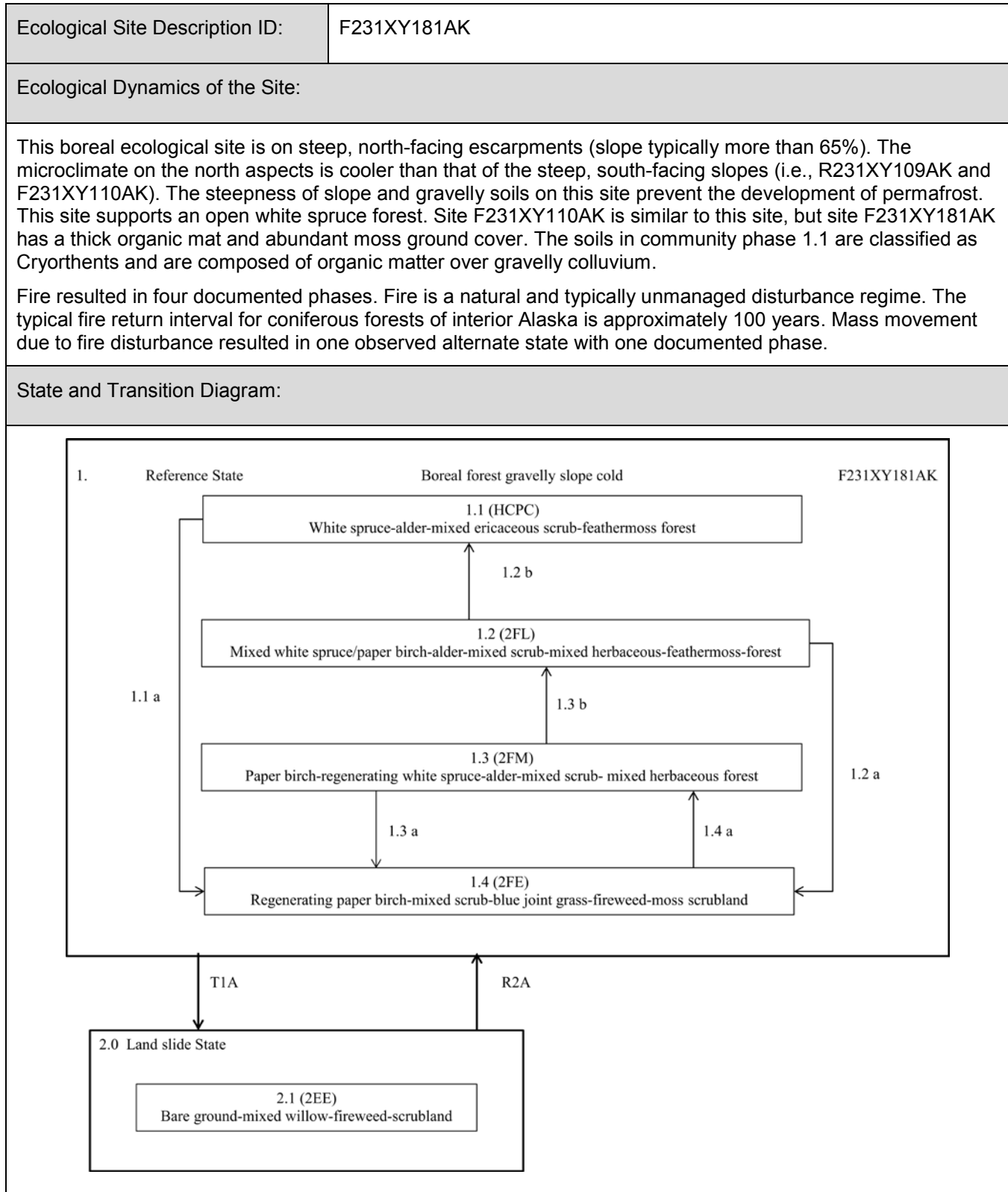
Organic Matter (percent): Low RV High

2 29.3 80


Bulk Density (1/3-Bar): Min RV Max

0.2 0.9 1.35


Plant Community Phases




| | | | |
|-------------------------------|---|-------------|-----------|
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event.</p> <p>Because of the steepness of slope and dominance of white spruce forest, a high-severity fire regime is considered to be the typical fire disturbance for this ecological site. During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Many pre-fire species likely will regenerate after fire, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>The fire return interval plays a significant role in the structure of the forest. Longer fire return intervals favor development of community phase 1.1, and shorter fire return intervals favor development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|--|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-alder-mixed ericaceous scrub-feathermoss forest |
| Community Phase Narrative: | | | |
| <p>The dominant vegetation is tall trees, low shrubs, and moss. The majority of the tree canopy is distributed between the tall and medium tree strata. <i>Picea glauca</i> is the most common tree species (~30% cover), but <i>Picea mariana</i> and <i>Betula neoalaskana</i> are also present. <i>Picea glauca</i> averages 101 years of age (ranges from 24 to 128 years). Tall, low, and dwarf shrubs are common (combined ~30% cover). The most common tall shrub is <i>Alnus viridis</i>, the most common low shrubs are <i>Ledum palustre</i> and <i>Juniperus communis</i>, and the most common dwarf shrub is <i>Vaccinium vitis-idaea</i>. A common graminoid is <i>Calamagrostis purpurascens</i>, and a common forb is <i>Geocaulon lividum</i>. <i>Hylocomium splendens</i> is an abundant ground cover. Three observations of this phase were conducted.</p> | | | |


| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Fire. For this community phase, white spruce is the dominant tree species. This phase has the longest fire return interval of the ecological site. |

| | | | |
|---|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Mixed white spruce/paper birch-alder-mixed scrub-mixed herbaceous-feathermoss-forest |
| Community Phase Narrative: | | | |
| <p>The dominant vegetation is medium trees, tall shrubs, low shrubs, and moss. <i>Betula neoalaskana</i> and <i>Picea glauca</i> are evenly distributed among the tall, medium, and regenerative tree strata. <i>Picea glauca</i> averages 143 years of age (ranges from 118 to 159 years), and the average diameter at breast height is 7 inches. The most common tall shrub is <i>Alnus viridis</i>. The most common low shrubs are <i>Rosa acicularis</i>, <i>Ribes triste</i>, and <i>Ledum palustre</i>. The most common dwarf shrub is <i>Vaccinium vitis-idaea</i>. Forbs and graminoids make up approximately 40% cover. A common graminoid is <i>Calamagrostis canadensis</i>, and common forbs are <i>Polygonum alpinum</i> and <i>Geocaulon lividum</i>. Feathermoss is an abundant ground cover. Two observations of this phase were conducted.</p> | | | |


| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. White spruce and paper birch are codominant. |
| 1.2b | Normal time and growth without fire. Paper birch eventually is replaced by white spruce, resulting in a community resembling that of phase 1.1. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.3. |

| | | | |
|---|---|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Paper birch-alder-mixed scrub-mixed herbaceous forest |
| Community Phase Narrative: | | | |
| <p>The dominant vegetation is tall trees, medium trees, and scrubs. The most common tall and medium tree species is <i>Betula neoalaskana</i> (~50% cover). <i>Picea glauca</i> is an abundant regenerating tree species (~10% cover). Scrubs are abundant (~50% cover). The most common tall scrub is <i>Alnus viridis</i>, the most common medium shrub is <i>Spiraea stevenii</i>, the most common low scrub is <i>Viburnum edule</i>, and the most common dwarf scrub is <i>Vaccinium vitis-idaea</i>. The most common graminoid is <i>Calamagrostis canadensis</i>, and the most common forb is <i>Equisetum pratense</i>. The abundant litter cover (80% cover) likely prevents the establishment of abundant moss ground cover. Two observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.3a | <p>Fire.</p> <p>Stands of paper birch are less likely to burn and fire is less likely to spread as compared to stands that support dominantly spruce. However, stands of paper birch in the study area have burned. If phase 1.3 is burned, the resulting community would likely resemble that of phase 1.4.</p> |
| 1.3b | <p>Normal time and growth without fire. White spruce becomes codominant with paper birch, resulting in a community resembling that of phase 1.2. The fire return interval is presumed to be shorter than that of phase 1.2 but longer than that of phase 1.4.</p> |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.4 |  | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Regenerating paper birch-mixed scrub-blue joint grass-fireweed-moss scrubland |

| Community Phase Narrative: | |
|--|---|
| <p>The dominant vegetation is regenerating trees, scrubs, graminoids, forbs, and moss. <i>Betula neoalaskana</i> is the most common regenerating tree species, but <i>Picea glauca</i> and <i>Populus tremuloides</i> were also present. Scrubs are primarily a mixture of medium-sized <i>Salix alaxensis</i> and <i>Salix bebbiana</i>. The most common graminoid is <i>Calamagrostis canadensis</i>, and the most common forb is <i>Chamerion angustifolium</i>. Moss is an abundant ground cover. Two observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.4a | <p>Normal time and growth without fire disturbance. The aspen and birch should mature, and the community should resemble that of phase 1.3. If this phase burns, the resulting community would likely resemble that of phase 1.4.</p> |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 2.1 |  | | |
| Community Phase Number: | 2.1 | Community Phase Name: | Bare ground-mixed willow-fireweed-scrubland |

| | |
|---|--|
| Community Phase Narrative: | |
| About 80% is exposed rock and soil. Scrub and forbs are the dominant vegetation. The most common medium scrub is <i>Salix alaxensis</i> , and the most common low scrub is <i>Rosa acicularis</i> . The most common forbs are <i>Chamerion angustifolium</i> , <i>Descurainia sophioides</i> , and <i>Artemisia tilesii</i> . | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | No additional phases were documented for this state. |

Transition

| | |
|--|---------------------|
| Transition Number: | T1A |
| To State/Community Phase: | 2.0 Landslide State |
| Transition Narrative: | |
| Landslides are assumed to occur after a fire event. These landslides would cause a transition from the reference state because the soil surface would remain highly erodible and unfavorable to the successional pathway in reference state 1.0. | |

Restoration Pathway

| | |
|---|---------------------|
| Restoration Pathway Number: | R2A |
| To State/Community Phase: | 1.0 Reference State |
| Restoration Pathway Narrative: | |
| It is currently unclear whether the sites can return to the reference state after a significant mass movement event. Vegetation might stabilize slopes sufficiently for the community to return to one resembling that of phase 1.3 or 1.4. | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
50 88 126

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
0 3.5 7

Texture: Highly decomposed plant material, sandy loam

AWC (cm/cm): Min RV Max
0.15 0.28 0.4

pH: Min RV Max
6.9 7.5 8.2

Subsurface Layer

Thickness (cm): Min RV Max
50 84.5 119

Texture: Very gravelly loam, channery coarse sandy loam, extremely gravelly sandy loam, coarse sandy loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.07 0.14 0.35

pH: Min RV Max
6.3 7.5 8.3

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-3 | 40-80 | 10-30 | 15-25 | 0-10 | 10-15 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-5 | --- | --- | --- |
| FD (<4 inches) | --- | 2-2 | --- | --- |
| FM (4-24 inches) | --- | 0.1-55 | --- | --- |
| FT (>24 inches) | --- | 1-20 | --- | --- |
| SL (8-36 inches) | --- | --- | 5-5 | --- |
| SM (3-10 feet) | --- | --- | 15-8 | --- |
| TR (<15 feet) | --- | --- | --- | 10-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 25-25-25 | 50 | 35.4 |
| CAPU | <i>Calamagrostis purpurascens</i> | 10-10-10 | 50 | 22.4 |
| POGL | <i>Poa glauca</i> | 5-5-5 | 50 | 15.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 0-1-2 | 100 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 30-42.5-55 | 100 | 65.2 |
| ARTI | <i>Artemisia tilesii</i> | 10-10-10 | 50 | 22.4 |
| MEPA | <i>Mertensia paniculata</i> | 0.1-1.1-2 | 100 | 10.2 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| DESO3 | <i>Descurainia sophioides</i> | 20-20-20 | 50 | 31.6 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| RUID | <i>Rubus idaeus</i> | 5-5-5 | 50 | 15.8 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| SAALA | <i>Salix alaxensis</i> var. <i>alaxensis</i> | 15-15-15 | 50 | 27.4 |
| SAALL | <i>Salix alaxensis</i> var. <i>longistylis</i> | 15-15-15 | 50 | 27.4 |
| SABE2 | <i>Salix bebbiana</i> | 8-8-8 | 50 | 20.0 |
| SASC | <i>Salix scouleriana</i> | 7-7-7 | 50 | 18.7 |
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 1-1.5-2 | 100 | 12.2 |
| SAPU15 | <i>Salix pulchra</i> | 1-1.5-2 | 100 | 12.2 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-15-20 | 100 | 38.7 |
| POTR5 | <i>Populus tremuloides</i> | 5-10-15 | 100 | 31.6 |
| PIGL | <i>Picea glauca</i> | 0-1.5-3 | 100 | 12.3 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Unknown | | | Unknown |

Notable Plants: *Cerastium maximum*

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—20-22-24

Community Phase 2FM



Rooting Depth (cm): Min RV Max
 78 81.5 85

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 6 7 8

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 3.6 5.2 6.8

Subsurface Layer

Thickness (cm): Min RV Max
 72 74.5 77

Texture: Very gravelly silt loam, channers, channery loam, silt loam, extremely channery sandy loam

AWC (cm/cm): Min RV Max
 0.03 0.17 0.25

pH: Min RV Max
 4.9 5.4 6.1

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-5 | 10-12 | 80-80 | 8-15 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-2 | --- | --- | --- |
| FM (4-24 inches) | --- | 1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-0.1 | --- |
| SL (8-36 inches) | --- | --- | 10-5 | --- |
| ST (>10 feet) | --- | --- | 10-10 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TM (15-40 feet) | --- | --- | --- | 10-10 |
| TT (>40 feet) | --- | --- | --- | 50-50 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 2-6-10 | 100 | 24.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQPR | <i>Equisetum pratense</i> | 20-20-20 | 50 | 31.6 |
| MEPA | <i>Mertensia paniculata</i> | 5-5-5 | 50 | 15.8 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 10-10-10 | 50 | 22.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| VIED | <i>Viburnum edule</i> | 10-10-10 | 50 | 22.4 |
| ROAC | <i>Rosa acicularis</i> | 1-3-5 | 100 | 17.3 |

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Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| SPST3 | <i>Spiraea stevenii</i> | 20-20-20 | 50 | 31.6 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-20-30 | 100 | 44.7 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-7.5-10 | 100 | 27.4 |
| BENE4 | <i>Betula neoalaskana</i> | 2-2-2 | 50 | 10.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-30-50 | 100 | 54.8 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 50-50-50 | 50 | 50.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|-------------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 3.5-5-5.4 | 34-37-42 | 4 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 50-50-50 | 1 |

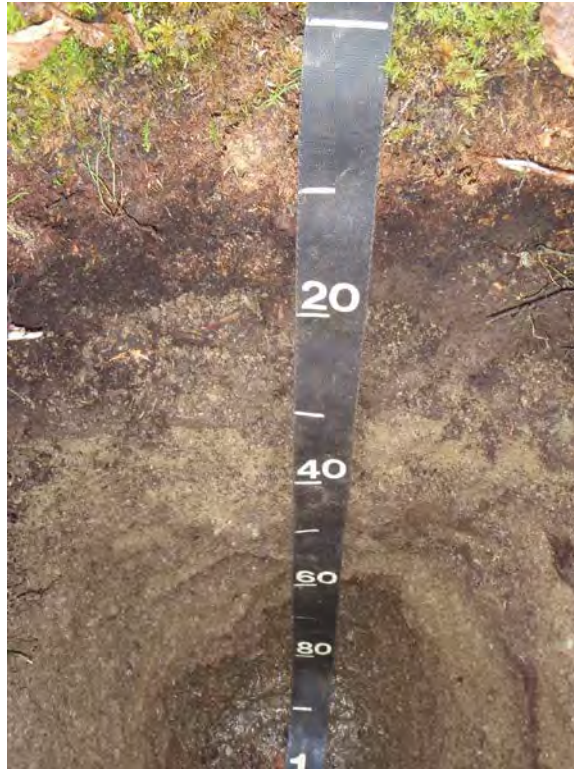
Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|---------------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Forbs, ferns, and horsetails | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—14-22-30

Community Phase 2FL



Rooting Depth (cm): Min RV Max
 82 91 100

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 10 11.5 13

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 4.4 5.5 6.7

Subsurface Layer

Thickness (cm): Min RV Max
 72 79.5 87

Texture: Very channery sandy loam, silt loam, extremely channery coarse sandy loam, extremely channery silt loam, extremely channery sandy loam, sandy loam

AWC (cm/cm): Min RV Max
 0.06 0.15 0.25

pH: Min RV Max
 6.1 6.6 7.2

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-5 | 30-70 | 35-70 | 10-10 | 0-0 | 0-1 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-5 | --- | --- | --- |
| FD (<4 inches) | --- | 2-2 | --- | --- |
| FM (4-24 inches) | --- | 0.1-3 | --- | --- |
| FT (>24 inches) | --- | 10-10 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-0.1 | --- |
| SL (8-36 inches) | --- | --- | 0.1-3 | --- |
| ST (>10 feet) | --- | --- | 65-65 | --- |
| TR (<15 feet) | --- | --- | --- | 3-5 |
| TM (15-40 feet) | --- | --- | --- | 15-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-17.5-20 | 100 | 41.8 |
| POPA2 | <i>Poa palustris</i> | 5-5-5 | 50 | 15.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 3-3-3 | 50 | 12.2 |
| SASP4 | <i>Saxifraga spicata</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 3-6.5-10 | 100 | 25.5 |
| GYDR | <i>Gymnocarpium dryopteris</i> | 0-5-10 | 100 | 22.4 |
| EQPR | <i>Equisetum pratense</i> | 10-10-10 | 50 | 22.4 |
| MEPA | <i>Mertensia paniculata</i> | 2-2.5-3 | 100 | 15.8 |
| BORO | <i>Boschniakia rossica</i> | 0-1.5-3 | 100 | 12.3 |

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Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| POAL11 | <i>Polygonum alpinum</i> | 7-8.5-10 | 100 | 29.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 0.1-5.1-10 | 100 | 22.5 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 5-10-15 | 100 | 31.6 |
| RITR | <i>Ribes triste</i> | 3-6.5-10 | 100 | 25.5 |
| LEGR | <i>Ledum groenlandicum</i> | 2-3.5-5 | 100 | 18.7 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-3-5 | 100 | 17.3 |
| SPST3 | <i>Spiraea stevenii</i> | 3-3-3 | 50 | 12.2 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 15-40-65 | 100 | 63.2 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-5-5 | 100 | 22.4 |
| BENE4 | <i>Betula neoalaskana</i> | 3-3-3 | 50 | 12.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-12.5-20 | 100 | 35.4 |
| BENE4 | <i>Betula neoalaskana</i> | 5-10-15 | 100 | 31.6 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 15-15-15 | 50 | 27.4 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 50 | 15.8 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 3.9-7-9.7 | 35-43-51 | 2 | B |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Tree Basal Area:

Min-Avg-Max Number of Stands

58-68-78 2

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—31-32-33

Community Phase 2EE



Rooting Depth (cm): Min RV Max
 97 97 97

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 0 0 0

Texture: Very channery sandy loam

AWC (cm/cm): Min RV Max
 0.09 0.09 0.09

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pH: Min RV Max
 7 7 7

Subsurface Layer

Thickness (cm): Min RV Max
 97 97 97

Texture: Extremely gravelly sandy loam, extremely channery coarse sandy loam, sandy loam

AWC (cm/cm): Min RV Max
 0.06 0.12 0.15

pH: Min RV Max
 7.3 7.4 7.5

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-3 | 10-10 | 25-25 | 5-5 | 25-25 | 55-55 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-3 | --- | --- | --- |
| FM (4-24 inches) | --- | 1-10 | --- | --- |
| FT (>24 inches) | --- | 10-40 | --- | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| SM (3-10 feet) | --- | --- | 1-5 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| CAPU | <i>Calamagrostis purpurascens</i> | 3-3-3 | 100 | 17.3 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-1-1 | 100 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ARTI | <i>Artemisia tilesii</i> | 10-10-10 | 100 | 31.6 |
| PARA11 | <i>Papaver radicum</i> | 1-1-1 | 100 | 10.0 |
| MEPA | <i>Mertensia paniculata</i> | 1-1-1 | 100 | 10.0 |
| CEMA5 | <i>Cerastium maximum</i> | 1-1-1 | 100 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------|---------------------------------|------------------|----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 40-40-40 | 100 | 63.2 |
| DESO3 | <i>Descurainia sophioides</i> | 25-25-25 | 100 | 50.0 |
| POAL11 | <i>Polygonum alpinum</i> | 10-10-10 | 100 | 31.6 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| ROAC | <i>Rosa acicularis</i> | 10-10-10 | 100 | 31.6 |
| RUID | <i>Rubus idaeus</i> | 5-5-5 | 100 | 22.4 |
| SAPU15 | <i>Salix pulchra</i> | 1-1-1 | 100 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| SAALA | <i>Salix alaxensis</i> var. <i>alaxensis</i> | 12-12-12 | 100 | 34.6 |
| SAALL | <i>Salix alaxensis</i> var. <i>longistylis</i> | 12-12-12 | 100 | 34.6 |
| SABE2 | <i>Salix bebbiana</i> | 5-5-5 | 100 | 22.4 |
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 1-1-1 | 100 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: *Cerastium maximum*

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—18-18-18

Community Phase HCPC



Rooting Depth (cm): Min RV Max
64 89.5 115

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
16 17 18

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.1 4.8 5.5

Subsurface Layer

Thickness (cm): Min RV Max
48 72.5 97

Texture: Extremely cobbly coarse sandy loam, very channery coarse sandy loam, very channery sandy loam

AWC (cm/cm): Min RV Max
0.06 0.09 0.12

pH: Min RV Max
6.5 7.1 7.6

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-5 | 80-90 | 10-30 | 3-5 | 0-1 | 0-1 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-3 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| FT (>24 inches) | --- | 3-3 | --- | --- |
| SD (<8 inches) | --- | --- | 15-2 | --- |
| SL (8-36 inches) | --- | --- | 2-45 | --- |
| SM (3-10 feet) | --- | --- | 1-1 | --- |
| ST (>10 feet) | --- | --- | 15-15 | --- |
| TR (<15 feet) | --- | --- | --- | 2-5 |
| TM (15-40 feet) | --- | --- | --- | 10-5 |
| TT (>40 feet) | --- | --- | --- | 5-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ELYMU | <i>Elymus</i> | 5-5-5 | 33 | 12.9 |
| CACA4 | <i>Calamagrostis canadensis</i> | 2-2.5-3 | 67 | 12.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| CAPU | <i>Calamagrostis purpurascens</i> | 25-25-25 | 33 | 28.9 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 5-5-5 | 67 | 18.3 |
| MEPA | <i>Mertensia paniculata</i> | 1-3-5 | 67 | 14.1 |
| HEAL | <i>Hedysarum alpinum</i> | 3-3-3 | 33 | 10.0 |
| GABO2 | <i>Galium boreale</i> | 3-3-3 | 33 | 10.0 |
| ARTI | <i>Artemisia tilesii</i> | 3-3-3 | 33 | 10.0 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 3-3-3 | 33 | 10.0 |

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Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| POAL11 | <i>Polygonum alpinum</i> | 3-3-3 | 33 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 15-15-15 | 33 | 22.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 45-45-45 | 33 | 38.7 |
| JUCO6 | <i>Juniperus communis</i> | 10-10-10 | 33 | 18.3 |
| ROAC | <i>Rosa acicularis</i> | 2-2.7-3 | 100 | 16.3 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 15-15-15 | 33 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 2-3.5-5 | 67 | 15.3 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 33 | 12.9 |
| BENE4 | <i>Betula neoalaskana</i> | 3-3-3 | 33 | 10.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 10-10-10 | 67 | 25.8 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 33 | 12.9 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 33 | 12.9 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-25-50 | 100 | 50.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 62-101-128 | 7.2-20-99 | 46-69-94 | 9 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 40-50-65 | 3 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—13-25-32

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca-Betula neoalaskana/Alnus viridis ssp. fruticosa-Rosa acicularis*

Ecological Classification ID: F231XY182AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Hills, mountains, escarpments

Slope (percent): Min Max

15 70

Elevation (feet): Min Max

787 3,281

Range of Aspect Direction: East to west (clockwise)

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: Very high

Frost-Free Days: Min Max

20 110

Mean Annual Precipitation (inches): Low High

10 27

Mean Annual Air Temperature (°F): Low High

19 28

Monthly Data:

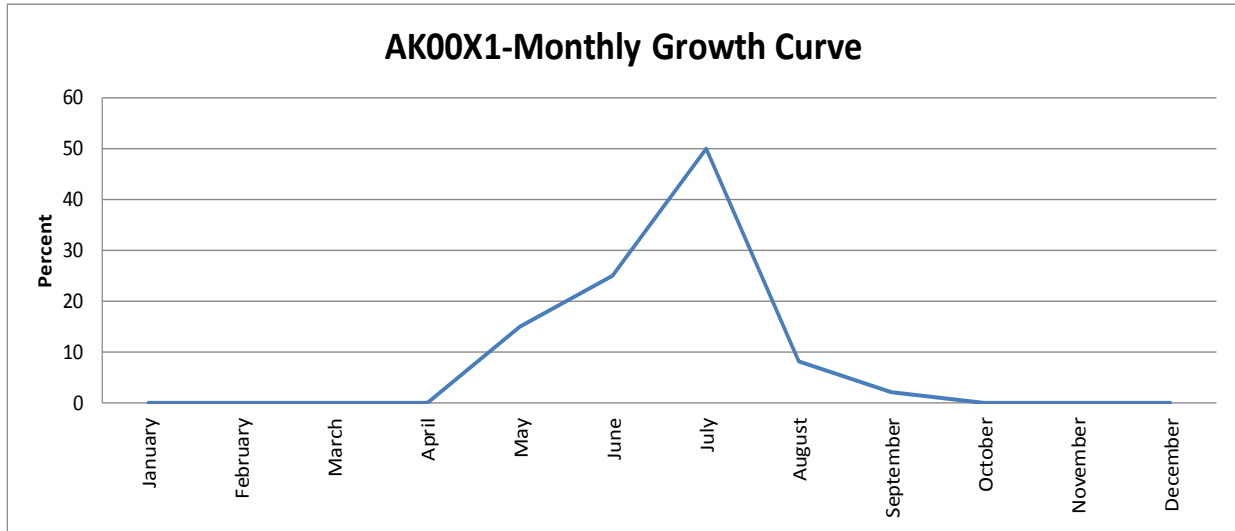
| <u>Month</u> | <u>Precipitation (in)</u> | <u>Precipitation (in)</u> | <u>Temperature (°F)</u> | <u>Temperature (°F)</u> |
|--------------|---------------------------|---------------------------|-------------------------|-------------------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH1—D31-Boreal forest rocky colluvial slopes
 D31BH2—D31-Boreal forest rocky colluvial slopes
 D31BH7—D31-Boreal forest rocky colluvial slopes
 D31LB1—D31-Boreal forest rocky colluvial slopes
 D31LB2—D31-Boreal forest rocky colluvial slopes
 D31OF1—D31-Boreal forest rocky colluvial slopes
 D31UC3—D31-Boreal forest rocky colluvial slopes

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive Typic Haplocryepts

Dominant Parent Material: Organic material over loess over gravelly colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 8 12 18

pH: Low RV High
 3.4 5.7 7.8

Effective CEC (me/100g): Low High
 12.8 40

CEC (me/100g): Min RV Max
 5.8 25.1 62


Organic Matter (percent): Low RV High
 2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 1 1.39


Plant Community Phases

| | | | |
|---|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY182AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is on south-facing backslopes of hills and mountains (slopes typically >25%). The soils in community phase 1.1 are classified as Haplocrypts and are composed of loess over gravelly colluvium. The climax phase community is characterized as a white spruce forest with a thick feathermoss mat. The surface organic layer of the climax phase community ranges from 6 to 23 centimeters thick. Ecological site F231XY117AK supports similar vegetation, but site F231XY182AK generally is on less steep slopes, has less productive forests, has a higher content of gravel in the soils, and generally does not have permafrost in the climax phase.</p> <p>Fire resulted in four documented phases. Fire is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div><div>1.0 Reference State</div><div>Boreal forest loamy slopes warm</div><div>F231XY182AK</div></div><div><div><div>1.1 (HCPC) White spruce-prickly rose-crowberry-lingonberry-feathermoss forest</div><div>1.2 b</div><div>1.2 (2FL) White spruce-paper birch-mixed ericaceous scrub-prickly rose-mixed forb-feathermoss forest</div><div>1.3 b</div><div>1.3 (2FM) Paper birch-alder-mixed low scrub-blue joint grass-mixed forb forest</div><div>1.3 a</div><div>1.4 (2FE) Willow-mixed scrub-blue joint grass-fireweed-moss scrubland</div><div>1.4 a</div></div><div><div>1.1 a</div><div>1.2 a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |

| | |
|------------------|---|
| State Narrative: | <p>Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event and the severity of the burn.</p> <p>A high-severity fire regime is considered to be the typical fire disturbance. During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Many pre-fire species likely will regenerate after a fire, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>The fire return interval plays a significant role in the structure of the forest. Longer fire return intervals favor development of community phase 1.1, and shorter fire return intervals favor development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|------------------|---|

| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White Spruce-Prickly Rose-Crowberry-Lingonberry-Feathermoss Forest |

| Community Phase Narrative: | |
|--|---|
| <p>The majority of the tree cover is in the tall tree stratum (total mature tree cover ~50%). <i>Picea glauca</i> is the dominant tree species, but <i>Betula neoalaskana</i> is also present. The majority of the shrub cover is in the dwarf stratum (total shrub cover was 45%). Common shrubs are <i>Rosa acicularis</i>, <i>Empetrum nigrum</i>, and <i>Vaccinium vitis-idaea</i>. Forbs are minor components (~10% cover), and common species are <i>Geocaulon lividum</i> and <i>Mertensia paniculata</i>. Graminoids and lichen are minor vegetative components. Moss forms an extensive ground cover, primarily composed of <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i> (~75% total moss cover). Seven observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Fire. White spruce is the dominant tree species. For this ecological site, this phase has the longest fire return interval. |


| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | White Spruce-Paper Birch-Mixed Ericaceous Scrub-Prickly Rose-Mixed Forb-Feathermoss Forest |

| Community Phase Narrative: | |
|--|--|
| <p>The majority of the tree cover is in the tall and medium tree strata (total mature tree cover ~40%). <i>Betula neoalaskana</i> and <i>Picea glauca</i> are the dominant tree species. Shrubs primarily are in the low and dwarf strata (total shrub cover ~75%). Common shrubs include <i>Alnus viridis</i>, <i>Rosa acicularis</i>, <i>Vaccinium vitis-idaea</i>, and <i>Ledum palustre</i>. As compared to phase 1.1, forbs makes up more cover (~25% cover). Common forbs are <i>Geocaulon lividum</i> and <i>Mertensia paniculata</i>. Graminoids and lichen are minor vegetative components. Although moss is less abundant as compared to phase 1.1, it still forms an extensive ground cover (~40%). Twelve observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. |
| 1.2b | <p>Normal time and growth without fire. Paper birch eventually is replaced by white spruce and results in a community resembling that of community phase 1.1. The fire return interval is presumed to be shorter than that of community phase 1.1 but longer than that of community phase 1.3.</p> <p>Paper birch commonly occurs as standing dead trees, which presumably indicates that the community is transitioning into a phase that is dominantly white spruce.</p> |

| | |
|-----------|--|
| Phase 1.3 |  |
|-----------|--|

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| | | | |
|---|--|-----------------------|--|
| Community Phase Number: | 1.3 | Community Phase Name: | Paper Birch-Alder-Mixed Low Scrub-Blue Joint Grass-Mixed Forb Forest |
| Community Phase Narrative: | | | |
| <p>The majority of the tree cover is in the medium tree stratum (total mature tree cover ~55%). <i>Betula neoalaskana</i> is the dominant mature tree species. The shrub cover is evenly distributed among the tall, low, and dwarf strata (total shrub cover ~50%). Common shrubs are <i>Alnus viridis</i>, <i>Rosa acicularis</i>, <i>Vaccinium vitis-idaea</i>, and <i>Linnaea borealis</i>. Forbs and graminoids make up ~25% cover. A common graminoid is <i>Calamagrostis canadensis</i>, and a common forb is <i>Mertensia paniculata</i>. Moss and lichen are minor vegetative components, in part due to the litter debris from the deciduous forest. Seven observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | <p>Fire.</p> <p>Stands of paper birch are less likely to burn and fire is less likely to spread as compared to stands that are dominantly spruce. However, stands of paper birch in the study area have burned. If community phase 1.3 is burned, the resulting community resembles that of community phase 1.4.</p> | | |
| 1.3b | <p>Normal time and growth without fire. White spruce becomes codominant with paper birch, resulting in a community resembling that of community phase 1.2. The fire return interval is presumed to be shorter than that of community phase 1.2 but longer than that of community phase 1.4.</p> | | |

| | | | |
|--|---|-----------------------|---|
| Phase 1.4 |  | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Willow-Mixed Scrub-Blue Joint Grass-Fireweed-Moss Scrubland |
| Community Phase Narrative: | | | |
| <p>Standing charred trees are common. Seedlings of <i>Betula neoalaskana</i>, <i>Picea glauca</i>, and <i>Populus tremuloides</i> are common (combined ~15% cover). The shrub cover is in the medium and low strata. Common species include <i>Alnus viridis</i>, <i>Salix</i> sp., and <i>Rosa acicularis</i>. Phase 1.4 has the highest combined forb and graminoid cover (~95% cover). The most common forbs are <i>Chamerion angustifolium</i> and <i>Mertensia paniculata</i>, and the most common graminoid is <i>Calamagrostis canadensis</i>. Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.4a | <p>Normal time and growth without fire. Paper birch matures, and eventually the community resembles that of community phase 1.3. If this phase burns, the resulting community likely resembles that of community phase 1.4.</p> | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
64 74.5 85

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
0 1.5 3

Texture: Slightly decomposed plant material, silt loam

AWC (cm/cm): Min RV Max
0.25 0.3 0.35

pH: Min RV Max
5.4 6.1 6.8

Subsurface Layer

Thickness (cm): Min RV Max
64 73 82

Texture: Very gravelly sandy loam, channery silt loam, silt loam, extremely channery loamy coarse sand, extremely channery sandy loam

AWC (cm/cm): Min RV Max
0.03 0.13 0.25

pH: Min RV Max
5.2 6.3 6.9

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-3 | 20-55 | 45-90 | 4-15 | 1-1 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 40-40 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-3 | --- | --- |
| FM (4-24 inches) | --- | 0.01-7 | --- | --- |
| FT (>24 inches) | --- | 15-5 | --- | --- |
| SD (<8 inches) | --- | --- | 10-10 | --- |
| SL (8-36 inches) | --- | --- | 0.01-10 | --- |
| SM (3-10 feet) | --- | --- | 10-7 | --- |
| TR (<15 feet) | --- | --- | --- | 15-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 55-55-55 | 50 | 52.4 |
| CAPU | <i>Calamagrostis purpurascens</i> | 2-2-2 | 50 | 10.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 40-40-40 | 50 | 44.7 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 3-3-3 | 50 | 12.2 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 30-30-30 | 50 | 38.7 |
| MEPA | <i>Mertensia paniculata</i> | 5-10-15 | 100 | 31.6 |
| EQVA | <i>Equisetum variegatum</i> | 7-7-7 | 50 | 18.7 |
| STLO2 | <i>Stellaria longipes</i> | 5-5-5 | 50 | 15.8 |
| GABO2 | <i>Galium boreale</i> | 3-3-3 | 50 | 12.2 |
| ERACP2 | <i>Erigeron acris ssp. politus</i> | 2-2-2 | 50 | 10.0 |

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Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 15-15-15 | 50 | 27.4 |
| DEGL3 | <i>Delphinium glaucum</i> | 5-5-5 | 50 | 15.8 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| LBO3 | <i>Linnaea borealis</i> | 10-10-10 | 50 | 22.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 3-6.5-10 | 100 | 25.5 |
| RUID | <i>Rubus idaeus</i> | 10-10-10 | 50 | 22.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 1-5.5-10 | 100 | 23.5 |
| VIDE | <i>Viburnum edule</i> | 10-10-10 | 50 | 22.4 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 7-7-7 | 50 | 18.7 |
| SABE2 | <i>Salix bebbiana</i> | 5-5-5 | 50 | 15.8 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 4-4-4 | 50 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 1-8-15 | 100 | 28.3 |
| POTR5 | <i>Populus tremuloides</i> | 2-3.5-5 | 100 | 18.7 |
| PIGL | <i>Picea glauca</i> | 5-5-5 | 50 | 15.8 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—22-26-30

Community Phase 2FM



Rooting Depth (cm): Min RV Max
58 69.4 81

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
3 5.4 9

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.33 0.35 0.35

pH: Min RV Max
5.5 6.1 7.2

Subsurface Layer

Thickness (cm): Min RV Max
55 64 72

Texture: Gravelly loam, extremely gravelly coarse sandy loam, channery loam, extremely gravelly loamy coarse sand, channery silt loam, very channery coarse sandy loam, extremely channery coarse sandy loam, extremely channery silt loam, very flaggy coarse sandy loam, extremely flaggy loam

AWC (cm/cm): Min RV Max
0.03 0.14 0.24

pH: Min RV Max
4.8 6.2 7.9

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-6 | 8-20 | 60-90 | 2-20 | 0-0 | 0-7 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 3-5 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-2 | --- | --- |
| FM (4-24 inches) | --- | 1-3 | --- | --- |
| FT (>24 inches) | --- | 0.01-0.01 | --- | --- |
| SD (<8 inches) | --- | --- | 15-5 | --- |
| SL (8-36 inches) | --- | --- | 1-8 | --- |
| ST (>10 feet) | --- | --- | 20-5 | --- |
| TR (<15 feet) | --- | --- | --- | 1-5 |
| TM (15-40 feet) | --- | --- | --- | 60-60 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 29 | 12.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 2-9.2-15 | 57 | 23.0 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 2-4-5 | 43 | 13.1 |
| GELI2 | <i>Geocaulon lividum</i> | 4-4.5-5 | 29 | 11.3 |
| LYCO3 | <i>Lycopodium complanatum</i> | 6-6-6 | 14 | 9.3 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 0.1-5.4-10 | 71 | 19.7 |
| GYDR | <i>Gymnocarpium dryopteris</i> | 0.1-5.1-10 | 29 | 12.0 |
| COCA13 | <i>Cornus canadensis</i> | 8-8-8 | 14 | 10.7 |
| GABO2 | <i>Galium boreale</i> | 3-4-5 | 29 | 10.7 |
| LYCO3 | <i>Lycopodium complanatum</i> | 7-7-7 | 14 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 10-10-10 | 29 | 16.9 |
| SOMU | <i>Solidago multiradiata</i> | 7-7-7 | 14 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| LIBO3 | <i>Linnaea borealis</i> | 0.1-8.2-30 | 71 | 24.2 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-8.2-15 | 71 | 24.2 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 3-7.2-10 | 71 | 22.7 |
| LEGR | <i>Ledum groenlandicum</i> | 3-6.7-12 | 43 | 16.9 |
| RITR | <i>Ribes triste</i> | 1-5.5-10 | 29 | 12.5 |
| SHCA | <i>Shepherdia canadensis</i> | 1-4-7 | 29 | 10.7 |
| VED | <i>Viburnum edule</i> | 8-8-8 | 14 | 10.7 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| VED | <i>Viburnum edule</i> | 15-15-15 | 14 | 14.6 |
| SABE2 | <i>Salix bebbiana</i> | 1-3-5 | 29 | 9.3 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 4-19-40 | 86 | 40.4 |
| SABE2 | <i>Salix bebbiana</i> | 5-10-15 | 29 | 16.9 |
| SASC | <i>Salix scouleriana</i> | 7-7-7 | 14 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 2-6.1-15 | 100 | 24.8 |
| BENE4 | <i>Betula neoalaskana</i> | 3-5.4-10 | 100 | 23.3 |
| PIMA | <i>Picea mariana</i> | 1-3.7-8 | 43 | 12.5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 7-41-60 | 100 | 64.0 |
| PIGL | <i>Picea glauca</i> | 3-7-15 | 43 | 17.3 |
| POTR5 | <i>Populus tremuloides</i> | 5-7.5-10 | 29 | 14.6 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 15-40-65 | 29 | 33.8 |
| PIGL | <i>Picea glauca</i> | 7-7-7 | 14 | 10.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 2.5-4-5.2 | 20-30-42 | 6 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 19-52.5-140 | 5 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other | | Unknown |
| Slight use | Other woody plants | | Spring |
| Slight use | Other woody plants | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—7; plant species per stop (min-avg-max)—15-25-30

Community Phase 2FL



Rooting Depth (cm): Min RV Max
 19 67.8 88

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 0 7.3 14

Texture: Slightly decomposed plant material, sandy loam

AWC (cm/cm): Min RV Max
 0.15 0.33 0.35

pH: Min RV Max
 4 5.1 6.3

Subsurface Layer

Thickness (cm): Min RV Max
 19 60.4 74

Texture: Cobbly silt loam, gravelly sandy loam, very cobbly silt loam, very gravelly loamy coarse sand, extremely cobbly sandy loam, very gravelly sandy loam, extremely gravelly coarse sandy loam, extremely gravelly sandy loam, very channery silt loam, very channery sandy loam, loam, silt loam, extremely channery silt loam, extremely channery sandy loam, sandy loam, extremely stony sandy loam

AWC (cm/cm): Min RV Max
 0.04 0.16 0.25

pH: Min RV Max
 4.2 5.6 7

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-35 | 12-75 | 10-80 | 2-70 | 0-3 | 0-8 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 1-10 | --- | --- |
| SD (<8 inches) | --- | --- | 3-5 | --- |
| SL (8-36 inches) | --- | --- | 1-60 | --- |
| ST (>10 feet) | --- | --- | 15-15 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TT (>40 feet) | --- | --- | --- | 10-10 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 0-5-10 | 50 | 15.8 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 3-9.5-15 | 33 | 17.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 2-13-25 | 33 | 20.8 |
| GELI2 | <i>Geocaulon lividum</i> | 2-7.2-10 | 33 | 15.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 1-6.2-20 | 67 | 20.4 |
| GELI2 | <i>Geocaulon lividum</i> | 3-7.2-15 | 50 | 18.9 |
| EQPA | <i>Equisetum palustre</i> | 15-15-15 | 8 | 11.2 |
| GABO2 | <i>Galium boreale</i> | 10-10-10 | 8 | 9.1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 1-4.3-7 | 25 | 10.4 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 3-18.6-65 | 92 | 41.3 |
| LIBO3 | <i>Linnaea borealis</i> | 3-4.3-7 | 50 | 14.7 |
| EMNI | <i>Empetrum nigrum</i> | 1-2.5-5 | 33 | 9.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 3-25.5-75 | 50 | 35.7 |
| ROAC | <i>Rosa acicularis</i> | 1-8.2-20 | 83 | 26.1 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 60-60-60 | 8 | 22.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 0-8.8-25 | 50 | 21.0 |
| SPST3 | <i>Spiraea stevenii</i> | 1-10.2-30 | 33 | 18.5 |
| BEGL | <i>Betula glandulosa</i> | 1-7-15 | 25 | 13.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 7-13.5-20 | 17 | 15.0 |
| BEOC2 | <i>Betula occidentalis</i> | 10-12.5-15 | 17 | 14.4 |
| SALIX | <i>Salix</i> | 1-5.7-8 | 25 | 11.9 |
| SABE2 | <i>Salix bebbiana</i> | 2-4.2-5 | 33 | 11.9 |
| ROAC | <i>Rosa acicularis</i> | 12-12-12 | 8 | 10.0 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 2-13.2-35 | 50 | 25.7 |
| BEOC2 | <i>Betula occidentalis</i> | 5-7.5-10 | 17 | 11.2 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 2-5.1-10 | 92 | 21.6 |
| BENE4 | <i>Betula neoalaskana</i> | 1-5.4-10 | 75 | 20.2 |
| PIMA | <i>Picea mariana</i> | 1-2.6-5 | 42 | 10.4 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-12.5-25 | 92 | 33.9 |
| BENE4 | <i>Betula neoalaskana</i> | 5-11.2-25 | 92 | 32.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 2-10.8-35 | 92 | 31.5 |
| BENE4 | <i>Betula neoalaskana</i> | 5-10.7-20 | 50 | 23.1 |
| POTR5 | <i>Populus tremuloides</i> | 10-10-10 | 8 | 9.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Betula neoalaskana</i> | --- | 4.25-7-18.5 | 31-49-94 | 9 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 25-64.3-135 | 11 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—12; plant species per stop (min-avg-max)—15-28-43

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 33 65 88

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 6 13.8 23

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 3.9 5.5 6.5

Subsurface Layer

Thickness (cm): Min RV Max
 27 51.2 65

Texture: Gravelly coarse sandy loam, very gravelly loamy coarse sand, very gravelly silt loam, extremely gravelly coarse sand, channery silt loam, extremely gravelly silt loam, very channery silt loam, silt loam, extremely channery silt loam, coarse sandy loam

AWC (cm/cm): Min RV Max
 0.02 0.15 0.24

pH: Min RV Max
 4.9 5.8 6.5

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-30 | 60-90 | 5-20 | 0-10 | 0-2 | 0-3 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FM (4-24 inches) | --- | 1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 1-1 | --- |
| SL (8-36 inches) | --- | --- | 5-5 | --- |
| ST (>10 feet) | --- | --- | 10-10 | --- |
| TM (15-40 feet) | --- | --- | --- | 5-5 |
| TT (>40 feet) | --- | --- | --- | 65-65 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-7.5-10 | 29 | 14.6 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 4-7-10 | 29 | 14.1 |
| LYAN2 | <i>Lycopodium annotinum</i> | 10-10-10 | 14 | 12.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 5-8-15 | 71 | 23.9 |
| MEPA | <i>Mertensia paniculata</i> | 1-6.6-15 | 71 | 21.7 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-20.6-50 | 71 | 38.4 |
| EMNI | <i>Empetrum nigrum</i> | 40-45-50 | 29 | 35.9 |
| LIBO3 | <i>Linnaea borealis</i> | 1-2.2-5 | 57 | 11.3 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 0-6.7-15 | 43 | 16.9 |
| SHCA | <i>Shepherdia canadensis</i> | 10-10-10 | 14 | 12.0 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-5-5 | 29 | 12.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 3-12.7-20 | 43 | 23.3 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 3-7.3-15 | 43 | 17.7 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 10-10-10 | 14 | 12.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 2-4.3-10 | 86 | 19.3 |
| BENE4 | <i>Betula neoalaskana</i> | 5-6.7-10 | 43 | 16.9 |
| PIMA | <i>Picea mariana</i> | 10-10-10 | 14 | 12.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 3-11.6-30 | 71 | 28.8 |
| BENE4 | <i>Betula neoalaskana</i> | 5-6-8 | 43 | 16.0 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 20-37.9-65 | 100 | 61.5 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 7-7-7 | 42-42-42 | 1 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 80-129.8-190 | 6 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Other | Other | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Other | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—7; plant species per stop (min-avg-max)—16-21.4-28

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca*/*Salix-Vaccinium uliginosum*

Ecological Classification ID: F231XY184AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Turf hummocks on hills, hills, mountains

Slope (percent): Min Max
15 65

Elevation (feet): Min Max
2,461 3,937

Range of Aspect Direction: South to northeast (clockwise)

Water Table Depth (cm): Min Max
40 60

Flooding: None

Ponding: None

Runoff: Very high

Frost-Free Days: Min Max
50 80

Mean Annual Precipitation (inches): Low High
11 27

Mean Annual Air Temperature (°F): Low High
19 28

Monthly Data:

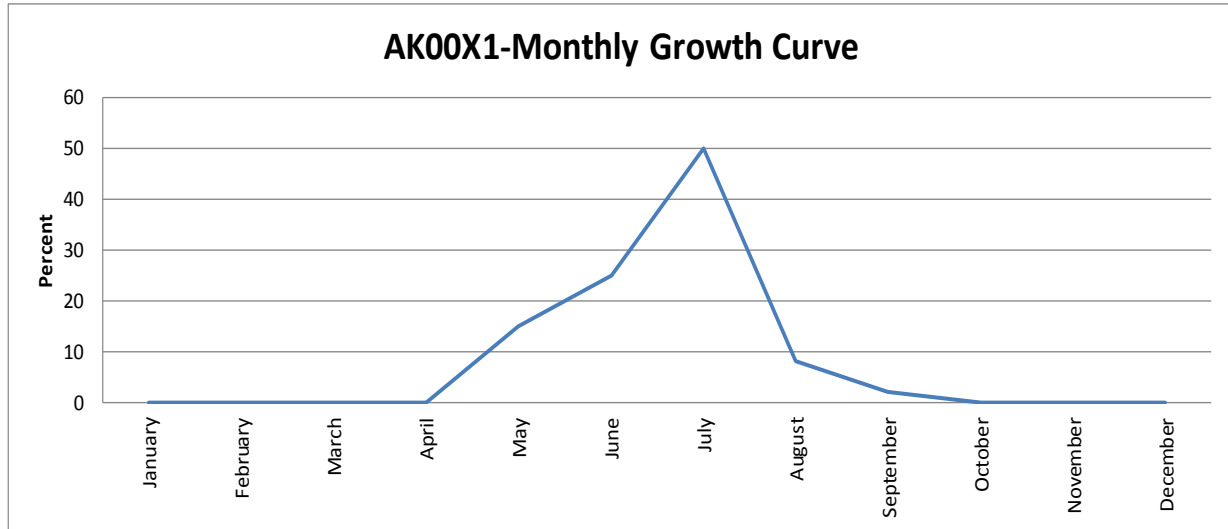
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31CF1—D31-Subalpine woodland silty colluvial slopes, frozen
 D31OM2—D31-Subalpine woodland silty colluvial slopes, frozen
 D31UC2—D31-Subalpine woodland silty colluvial slopes, frozen

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haploorthels

Dominant Parent Material: Organic material over loess over gravelly colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 8 18 30

pH: Low RV High
 4.4 6.3 7.1

Effective CEC (me/100g): Low High
 11.5 29

CEC (me/100g): Min RV Max
 5.1 26.6 88.2


Organic Matter (percent): Low RV High
 1 22.2 80

Bulk Density (1/3-Bar): Min RV Max
 0.41 1.1 1.56

Plant Community Phases

| | | | |
|--|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY184AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This subalpine ecological site is generally on moderate slopes at high elevations (>20% slopes; 1,050 to 2,000 meters in elevation). F231XY140AK is a similar subalpine ecological site, but site F231XY184AK has a higher amount of rock fragments in the soil, does not have permafrost in the soil, and has a climax phase community that is considered white spruce woodland. The soils in community phase 1.1 are classified as Haplorthels and are composed of organic matter over loess and/or gravelly colluvium.</p> <p>Fire is a documented disturbance regime resulting in three observed phases. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. High-severity fire events are more typical on this site than are low-severity fire events. Low-severity and high-severity fire events appear to cause differences in the depth of the organic material on the soil surface, the presence and/or depth to permafrost, and the present and potential vegetation.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div>Subalpine forest loamy frozen slopes</div><div>F231XY184AK</div><div><div><div>1.1 (HCPC) White spruce-willow-mixed dwarf scrub-mixed forb-feathermoss forest</div><div>1.1b</div><div>1.2 (2FL) White spruce regeneration-willow-mixed dwarf scrub-mixed forb-feathermoss woodland</div><div>1.2b</div><div>1.2a</div><div>1.3 (2FE) Willow-mixed grass-mixed forb-moss scrubland</div><div>1.3a</div><div>1.1a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |

| | |
|------------------|--|
| State Narrative: | <p>Vegetation in the climax phase is a highly diverse mixture of trees, shrubs, graminoids, forbs, lichen, and moss. Trees primarily are in the tall and medium strata. The shrubs primarily are in the medium, low, and dwarf strata. The late and climax phases have similar vegetation. The decision to split the phases was based primarily on the general height and age of the tree strata, which seem to indicate the time since the fire disturbances.</p> <p>During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow). With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.2.</p> <p>In interior Alaska, the dominant subalpine tree species is <i>Picea glauca</i>. As <i>Picea glauca</i> establishes after fire from offsite seed sources, the fire return interval likely plays a substantial role in controlling the abundance of white spruce. A shorter fire return interval likely results in a less abundant long-term coniferous tree cover than does a longer fire return interval.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|------------------|--|


| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-willow-mixed dwarf scrub-mixed forb-feathermoss forest |

Community Phase Narrative:


The majority of the tree canopy is distributed between medium and tall trees, but stunted and regenerative trees are also present. *Picea glauca* is the most common tree species, but *Picea mariana* is also present. *Picea glauca* averages 135 years of age (ranges from 52 to 272 years) and has an average diameter at breast height of 8.3 inches. Medium, low, and dwarf shrubs are equally abundant, commonly more than 100% combined cover. The most common medium shrubs are *Betula glandulosa* and an assortment of willows, including *Salix pulchra*, *Salix glauca*, *Salix bebbiana*, and *Salix richardsonii*. The most common low shrubs are *Ledum palustre* and *Vaccinium uliginosum*. Numerous dwarf shrub species are present (9 species), and some common species are *Dryas octopetala*, *Arctostaphylos rubra*, *Cassiope tetragona*, and *Salix reticulata*. As compared to shrubs, graminoids and forbs are minor vegetative components. Common graminoids include *Festuca altaica* and *Carex scirpoidea*. The diversity of forbs is high (commonly more than 20 species per plot), but no individual species is abundant. Some forb species unique to this ecological site are *Saussurea angustifolia*, *Valeriana capitata*, and *Papavar sp.* Moss cover typically is higher than lichen cover and consists primarily of feathermoss species, including *Hylocomium splendens* and *Pleurozium schreberi*. The diversity of lichen is high, but no individual species is abundant. Thirteen observations of this phase were conducted.

Community Pathways

| Pathway Number: | Pathway Name & Description: |
|-----------------|--|
| 1.1a | High-intensity fire. Climax sites generally have wet soils and a thick organic layer (commonly >15 cm. thick), which might hinder high-severity fires. However, the community resembles that associated with high-intensity fires (e.g., lacking permafrost and having a dominance of herbaceous plants). |
| 1.1b | Low-intensity fire or spot fire. A low-intensity or spot fire likely would result in a community that resembles that of a late fire phase community. After a low-severity burn, some shrubs and graminoids can quickly recolonize and become dominant on a site as a result of below-ground root reserves that are not consumed in the fire event. |

| | | | |
|--|--|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | White spruce regeneration-willow-mixed dwarf scrub-mixed forb-feathermoss woodland |
| Community Phase Narrative: | | | |
| <p>Most other vegetative components in the late and climax phases are similar; therefore, the tree canopy is the major distinguishing factor. The tree canopy consists primarily of medium, stunted, and regenerating trees. <i>Picea glauca</i> is the most common species, but <i>Picea mariana</i> is also present. <i>Picea glauca</i> averages 87 years of age (ranges from 32 to 229 years) and has an average diameter at breast height of 4.8 inches. Medium, low, and dwarf shrubs are equally abundant, commonly exceeding 100% combined cover. The most common shrub species are similar to those of phase 1.1. Graminoids, forbs, and lichen are minor vegetative components. The most common graminoids are sedges, primarily <i>Carex sp.</i> The diversity of forbs is high. The moss cover typically is higher in abundance than the lichen cover. Most of the moss is feathermoss species, including <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i>. Four observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Fire. | | |

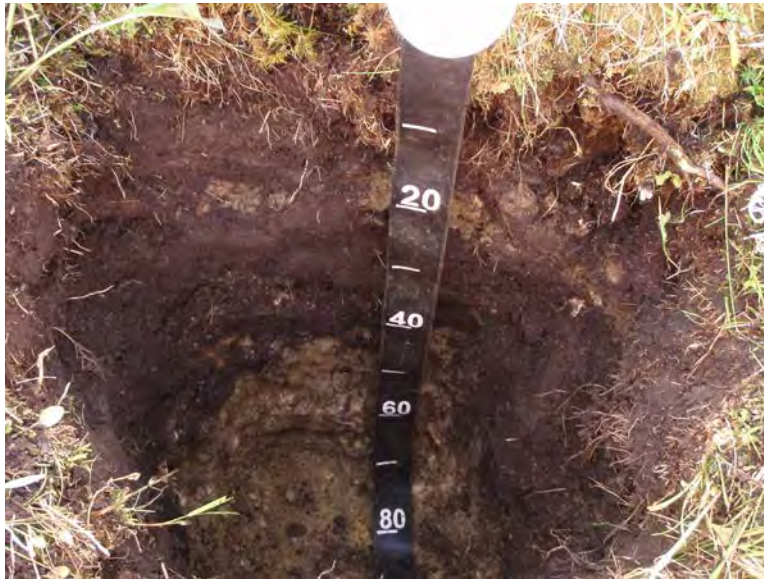
| | |
|------|---|
| 1.2b | Normal time and growth without fire. Overall, late and climax phase plant communities are very similar but they were split in large part due to the typical size/age of the trees. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.3. |
|------|---|

| | | | |
|--|---|-----------------------|--|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Willow-mixed grass-mixed forb-moss scrubland |
| Community Phase Narrative: | | | |
| <p>No live tree species were observed. As compared to the climax and late phase communities, the early fire phase community has a lower abundance of shrubs and a higher abundance of forbs and graminoids. The most common shrub is <i>Salix pulchra</i>. The most common graminoids are <i>Poa sp.</i> and <i>Calamagrostis canadensis</i>. The most common forb is <i>Chamerion angustifolium</i>. Moss is the dominant vegetative ground cover, and the most common species is <i>Hylocomium splendens</i>. One observation of this phase was conducted. Fire appears to greatly reduce the diversity of vegetation.</p> | | | |

| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Normal time and growth without fire. Mixed spruce woodland develops. |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
78 78 78

Restrictive Features: None recorded

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
13 13 13

Texture: Moderately decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.4 4.4 4.4

Subsurface Layer

Thickness (cm): Min RV Max
65 65 65

Texture: Very gravelly silt loam, silt loam

AWC (cm/cm): Min RV Max
0.2 0.23 0.25

pH: Min RV Max

6.8 7 7.1

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-5 | 50-50 | 5-5 | 35-35 | 5-5 | 1-1 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-5 | --- | --- | --- |
| GT (>24 inches) | 15-5 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-0.01 | --- | --- |
| FM (4-24 inches) | --- | 0.01-5 | --- | --- |
| SD (<8 inches) | --- | --- | 1-5 | --- |
| SL (8-36 inches) | --- | --- | 0.01-0.01 | --- |
| SM (3-10 feet) | --- | --- | 2-20 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| POARA2 | <i>Poa arctica</i> ssp. <i>arctica</i> | 15-15-15 | 100 | 38.7 |
| POAL2 | <i>Poa alpina</i> | 15-15-15 | 100 | 38.7 |
| CAPO | <i>Carex podocarpa</i> | 10-10-10 | 100 | 31.6 |
| POPA2 | <i>Poa palustris</i> | 5-5-5 | 100 | 22.4 |
| LUPA4 | <i>Luzula parviflora</i> | 5-5-5 | 100 | 22.4 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 100 | 38.7 |
| CASTI3 | <i>Calamagrostis stricta</i> ssp. <i>inexpansa</i> | 5-5-5 | 100 | 22.4 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 10-10-10 | 100 | 31.6 |
| DEGL3 | <i>Delphinium glaucum</i> | 5-5-5 | 100 | 22.4 |
| EQPR | <i>Equisetum pratense</i> | 5-5-5 | 100 | 22.4 |
| POVI3 | <i>Polygonum viviparum</i> | 2-2-2 | 100 | 14.1 |
| MEPA | <i>Mertensia paniculata</i> | 2-2-2 | 100 | 14.1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------------------|---------------------------------|------------------|----------------------------|
| RUARA2 | <i>Rubus arcticus ssp. acaulis</i> | 5-5-5 | 100 | 22.4 |
| ARRU | <i>Arctostaphylos rubra</i> | 2-2-2 | 100 | 14.1 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-1-1 | 100 | 10.0 |
| EMNI | <i>Empetrum nigrum</i> | 1-1-1 | 100 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 20-20-20 | 100 | 44.7 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 2-2-2 | 100 | 14.1 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Willows | Moose | Spring |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—28-28-28

Community Phase 2FL



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
64 64 64

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
30 30 30

Texture: Slightly decomposed plant material, peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.6 4.6 4.6

Subsurface Layer

Thickness (cm): Min RV Max
34 34 34

Texture: Silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.28 0.32 0.36

pH: Min RV Max
7.1 7.1 7.1

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 8-55 | 40-85 | 7-55 | 2-7 | 0-4 | 0-1 | 0-8 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-50 | --- | --- | --- |
| GT (>24 inches) | 20-7 | --- | --- | --- |
| FD (<4 inches) | --- | 2-2 | --- | --- |
| FM (4-24 inches) | --- | 20-3 | --- | --- |
| SD (<8 inches) | --- | --- | 10-8 | --- |
| SL (8-36 inches) | --- | --- | 10-8 | --- |
| SM (3-10 feet) | --- | --- | 12-12 | --- |
| TR (<15 feet) | --- | --- | --- | 10-4 |
| TS (<15 feet) | --- | --- | --- | 8-8 |
| TM (15-40 feet) | --- | --- | --- | 5-7 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 5-27.5-50 | 50 | 37.1 |
| CABI5 | <i>Carex bigelowii</i> | 3-7.2-15 | 100 | 26.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 6-12.7-20 | 75 | 30.8 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 7-7-7 | 25 | 13.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 7-7-7 | 25 | 13.2 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| EQUIS | <i>Equisetum</i> | 4-12-20 | 50 | 24.5 |
| PELA | <i>Pedicularis labradorica</i> | 3-3.5-4 | 50 | 13.2 |
| SELU | <i>Senecio lugens</i> | 3-3.5-4 | 50 | 13.2 |
| POVI3 | <i>Polygonum viviparum</i> | 3-3-3 | 50 | 12.2 |
| SAAN3 | <i>Saussurea angustifolia</i> | 1-2-3 | 50 | 10.0 |
| VACA3 | <i>Valeriana capitata</i> | 4-4-4 | 25 | 10.0 |
| PEDIC | <i>Pedicularis</i> | 4-4-4 | 25 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| BORI2 | <i>Boykinia richardsonii</i> | 6-6-6 | 25 | 12.2 |
| MEPA | <i>Mertensia paniculata</i> | 5-5-5 | 25 | 11.2 |
| POBO2 | <i>Polemonium boreale</i> | 4-4-4 | 25 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 3-6.8-10 | 100 | 26.0 |
| EMNI | <i>Empetrum nigrum</i> | 3-5.5-8 | 100 | 23.5 |
| DROC | <i>Dryas octopetala</i> | 4-9.5-15 | 50 | 21.8 |
| ARRU | <i>Arctostaphylos rubra</i> | 2-5-7 | 75 | 19.4 |
| SARE2 | <i>Salix reticulata</i> | 5-6-7 | 50 | 17.3 |
| CATE11 | <i>Cassiope tetragona</i> | 3-4-5 | 75 | 17.3 |
| RUCH | <i>Rubus chamaemorus</i> | 2-3.5-5 | 50 | 13.2 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| B EGL | <i>Betula glandulosa</i> | 7-12.3-20 | 75 | 30.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-9.2-25 | 100 | 30.4 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 6-18-30 | 50 | 30.0 |
| LEGR | <i>Ledum groenlandicum</i> | 5-6.5-8 | 50 | 18.0 |
| ARRU | <i>Arctostaphylos rubra</i> | 5-5-5 | 25 | 11.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SALIX | <i>Salix</i> | 8-16-25 | 125 | 44.7 |
| BEOC2 | <i>Betula occidentalis</i> | 15-17.5-20 | 50 | 29.6 |
| B EGL | <i>Betula glandulosa</i> | 30-30-30 | 25 | 27.4 |
| SAGL | <i>Salix glauca</i> | 25-25-25 | 25 | 25.0 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-10-10 | 50 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 4-6-10 | 100 | 24.5 |
| PIMA | <i>Picea mariana</i> | 4-4-4 | 25 | 10.0 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 8-9-10 | 50 | 21.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-6.8-10 | 100 | 26.0 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 25 | 11.2 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 8-8-8 | 25 | 14.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 33-97-229 | 1.6-5-11.75 | 7-23-43 | 8 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 56-56-56 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—21-32-46

Community Phase HCPC



| <u>Rooting Depth (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|----------------------------|------------|-----------|------------|
| | 38 | 58.6 | 78 |

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

| <u>Thickness (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------------------|------------|-----------|------------|
| | 9 | 17.8 | 28 |

Texture: Slightly decomposed plant material, peat

| <u>AWC (cm/cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|---------------------|------------|-----------|------------|
| | 0.35 | 0.35 | 0.35 |

| <u>pH:</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------|------------|-----------|------------|
| | 4.2 | 5.4 | 6.5 |

Subsurface Layer

| <u>Thickness (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------------------|------------|-----------|------------|
| | 29 | 40.8 | 50 |

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Texture: Gravelly coarse sandy loam, very gravelly coarse sandy loam, very channery silt loam, silt loam, extremely channery sandy loam, extremely stony silt loam

AWC (cm/cm): Min RV Max
0.06 0.17 0.24

pH: Min RV Max
5.7 6.4 7.1

Influencing Water Features

NWI Code: PFO4

NWI Description: Palustrine, Forested, Needle-Leaved Evergreen

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 15-65 | 25-85 | 1-32 | 0-15 | 0-2 | 0-5 | 0-5 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 7-8 | --- | --- | --- |
| FD (<4 inches) | --- | 2-2 | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 10-5 | --- |
| SL (8-36 inches) | --- | --- | 10-3 | --- |
| SM (3-10 feet) | --- | --- | 10-5 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TT (>40 feet) | --- | --- | --- | 35-35 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|------------------------------|------------------|-------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 3-7.7-15 | 54 | 20.4 |
| CAPO | <i>Carex podocarpa</i> | 2-9.4-20 | 38 | 19.0 |
| CASC10 | <i>Carex scirpoidea</i> | 1-7-15 | 31 | 14.7 |
| CABI5 | <i>Carex bigelowii</i> | 5-7.5-10 | 15 | 10.7 |
| CAREX | <i>Carex</i> | 5-6.5-8 | 15 | 10.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|------------------------------|------------------|-------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 3-5.5-8 | 15 | 9.2 |
| FEAL | <i>Festuca altaica</i> | 1-5.5-10 | 15 | 9.2 |

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Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 3-5.8-10 | 31 | 13.3 |
| EQSC | <i>Equisetum scirpoides</i> | 1-4.3-10 | 23 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------|---------------------------------|------------------|----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 55-55-55 | 8 | 20.6 |
| ANMO9 | <i>Antennaria monocephala</i> | 5-16.7-35 | 23 | 19.6 |
| EQAR | <i>Equisetum arvense</i> | 15-17.5-20 | 15 | 16.4 |
| BORI2 | <i>Boykinia richardsonii</i> | 3-9.3-15 | 23 | 14.7 |
| MEPA | <i>Mertensia paniculata</i> | 1-2.7-7 | 69 | 13.6 |
| SAAN3 | <i>Saussurea angustifolia</i> | 1-4.5-10 | 31 | 11.8 |
| GELI2 | <i>Geocaulon lividum</i> | 0.1-2.2-7 | 46 | 10.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------------|---------------------------------|------------------|----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 3-12.9-25 | 92 | 34.5 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-7.8-15 | 100 | 27.9 |
| ARRU | <i>Arctostaphylos rubra</i> | 1-10.1-15 | 62 | 25.0 |
| SARE2 | <i>Salix reticulata</i> | 1-13-30 | 46 | 24.5 |
| DROC | <i>Dryas octopetala</i> | 1-7.2-25 | 69 | 22.4 |
| CATE11 | <i>Cassiope tetragona</i> | 1-8.1-20 | 54 | 20.9 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 1-3-5 | 31 | 9.6 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 3-10.6-20 | 100 | 32.6 |
| LEGR | <i>Ledum groenlandicum</i> | 2-11.7-20 | 54 | 25.1 |
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 2-12-20 | 46 | 23.5 |
| SAPU15 | <i>Salix pulchra</i> | 5-7.5-10 | 15 | 10.7 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| BEGL | <i>Betula glandulosa</i> | 0-20.3-50 | 54 | 33.1 |
| SARI4 | <i>Salix richardsonii</i> | 3-15.6-40 | 38 | 24.5 |
| SAGL | <i>Salix glauca</i> | 2-7.8-15 | 62 | 21.8 |
| SAPU15 | <i>Salix pulchra</i> | 2-8.7-25 | 46 | 20.0 |
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 2-5.4-10 | 38 | 14.4 |
| SALIX | <i>Salix</i> | 10-12.5-15 | 15 | 13.9 |
| SABE2 | <i>Salix bebbiana</i> | 3-6-10 | 23 | 11.8 |
| ALINT | <i>Alnus incana</i> ssp. <i>tenuifolia</i> | 5-5-5 | 23 | 10.7 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 0-6-15 | 92 | 23.6 |
| PIMA | <i>Picea mariana</i> | 15-15-15 | 8 | 10.7 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-19.5-50 | 85 | 40.7 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 3-12.6-35 | 77 | 31.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 52-134-272 | 2-8-17.6 | 6-35-66 | 39 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 20-42.4-70 | 11 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | | | Spring |
| Slight use | | Moose | Spring |
| Slight use | Other | | Unknown |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—13; plant species per stop (min-avg-max)—25-34-48

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Populus balsamifera-Picea glauca/Alnus incana ssp. tenuifolia-Salix alaxensis/Equisetum arvense-Mertensia paniculata*

Ecological Classification ID: F231XY189AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Middle and high flood plains

Slope (percent): Min Max

1 15

Elevation (feet): Min Max

623 984

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

0 0

Flooding: Frequency Duration

Occasional Brief

Ponding: None

Runoff: Low

Frost-Free Days: Min Max

75 110

Mean Annual Precipitation (inches): Low High

9 16

Mean Annual Air Temperature (°F): Low High

23 27

Monthly Data:

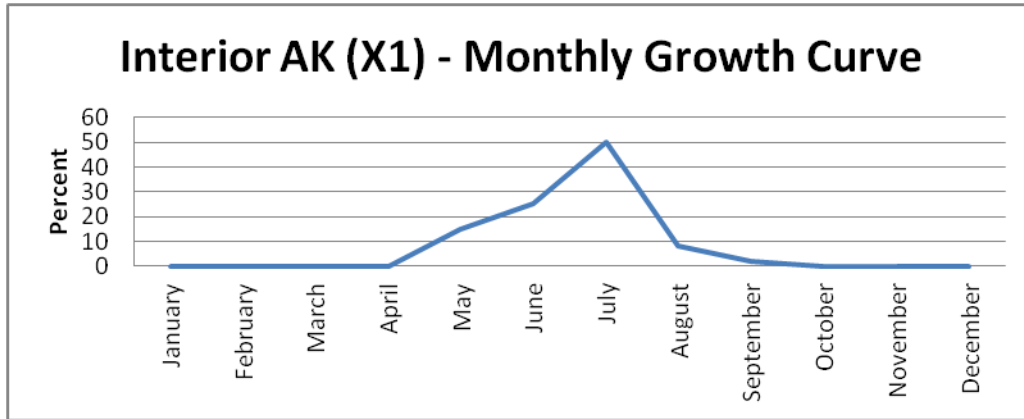
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31YV1—D31-Boreal forest loamy mid flood plains

D31YV8—D31-Boreal forest loamy mid flood plains

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, calcareous Typic Cryofluvents

Dominant Parent Material: Organic material over loamy alluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
15 38 65

pH: Low RV High
4 7.7 8.2

Effective CEC (me/100g): Low High
22.9 52.8

CEC (me/100g): Min RV Max
2.1 22.4 62


Organic Matter (percent): Low RV High
1 27.7 80


Bulk Density (1/3-Bar): Min RV Max
1.14 1.2 1.42


Plant Community Phases

| | | | |
|--|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY189AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is adjacent to the Yukon River, which floods frequently to occasionally. The soils are classified as Cryofluvents and are primarily stratified loamy alluvium. Flood events are common, but the low intensity of the flooding allows for the dominance of deciduous trees and the establishment of coniferous trees. The shift in the intensity of flooding results in a successional progression from site R231XY198AK (starting with community phase 1.3). As the site progresses from phase 1.3 to 1.1, the amount of exposed bare soil decreases and the content of organic matter increases. The soils in community phase 1.1 are classified as Cryofluvents and are composed of organic material over loamy alluvium.</p> <p>As a river breaks up in spring, pack ice commonly breaches the riverbanks and causes a disturbance referred to as ice bulldozing. This ice-related disturbance completely removes stands of balsam poplar and white spruce. Common shrub and deciduous tree species quickly reestablish from below-ground root reserves after this disturbance. This disturbed community appears to resemble that of community phase 1.3, so no unique community phase was created.</p> <p>Flooding is a disturbance regime that results in three unique community phases.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div>Boreal forest loamy floodplain mid</div><div>F231XY189AK</div><div><div><div>1.1 (HCPC) Balsam poplar-white spruce-alder-high bush cranberry-red osier dogwood-prickly rose-horsetail forest</div><div>1.2 b</div><div>1.2 (2AM) Balsam poplar-thinleaf alder-red osier dogwood-horsetail forest</div><div>1.2 a</div><div>1.3 (2AE) Balsam poplar-thinleaf alder-feltleaf willow-red osier dogwood scrubland</div><div>1.3 a</div><div>1.1 a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |

| | |
|------------------|---|
| State Narrative: | <p>Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous tree species, which are believed to be directly related to the duration and intensity of flooding and/or ice damming in areas adjacent to the Yukon River.</p> <p>If the intensity of flooding increases and hinders the establishment and growth of tree species, the site transitions to ecological site R231XY198. If the flood regime shifts so that it favors growth of white spruce, the site transitions to site F231XY196AK.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|------------------|---|

| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Balsam poplar-white spruce-alder-high bush cranberry-red osier dogwood-prickly rose-horsetail forest |

| | | | |
|--|--|-----------------------|---|
| Community Phase Narrative: | | | |
| <p>As compared to community phase 1.2, phase 1.1 has a taller and denser deciduous tree cover and a more abundant coniferous tree cover. The tree cover is primarily in the tall tree stratum (total mature tree cover ~70% cover). The dominant tree species is <i>Populus balsamifera</i>, and <i>Picea glauca</i> is codominant (tall, medium, and regenerative tree strata). The shrub cover is abundant and is primarily in the tall and medium shrub strata (~140% cover), and the most common species are <i>Alnus incana</i> ssp. <i>tenuifolia</i>, <i>Cornus sericea</i>, <i>Viburnum edule</i>, and <i>Rosa acicularis</i>. Forbs are a dominant understory component (~30% cover), and common species are <i>Equisetum arvense</i>, <i>Mertensia paniculata</i>, and <i>Galium boreale</i>. Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Intense flooding and/or ice shearing can remove a majority of the tree canopy. Species such as balsam poplar, alder, willow, and red osier dogwood quickly reestablish, resulting in a community that resembles that of community phase 1.3. | | |
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Balsam poplar-thinleaf alder-red osier dogwood-horsetail forest |

| | | | |
|--|--|-----------------------|--|
| Community Phase Narrative: | | | |
| <p>As compared to community phase 1.3, phase 1.2 has less willow cover and a taller and denser deciduous tree cover. The tree cover is primarily in the tall and medium tree strata (~40% cover), and the primary species is <i>Populus balsamifera</i>. The shrub cover is abundant and is primarily in the tall shrub stratum (~65% cover). The most common species are <i>Alnus incana</i> ssp. <i>tenuifolia</i>, <i>Alnus viridis</i> ssp. <i>fruticosa</i>, and <i>Cornus sericea</i>. Forbs are a dominant understory component (~30% cover), and common species are <i>Equisetum arvense</i>, <i>Mertensia paniculata</i>, and <i>Galium boreale</i>. Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Intense flooding and/or ice shearing can remove a majority of the tree canopy. Species such as balsam poplar, alder, willow, and red osier dogwood quickly reestablish, resulting in a community that resembles that of community phase 1.3. | | |
| 1.2b | Normal time and growth. Balsam poplar matures, and the flood regime allows for establishment and growth of white spruce. | | |
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Balsam poplar-thinleaf alder-feltleaf willow-red osier dogwood scrubland |

| Community Phase Narrative: | |
|---|---|
| <p>The tree cover is primarily in the regenerative stratum (2-15% cover), and the most common species is <i>Populus balsamifera</i>. Shrubs are the dominant vegetation, and they are primarily in the tall shrub stratum (total shrub cover ~150%). Common species include <i>Cornus sericea</i>, <i>Alnus incana</i> ssp. <i>tenuifolia</i>, and <i>Salix alaxensis</i>. Graminoids and forbs are minor vegetative components. Common species include <i>Eurybia sibirica</i>, <i>Mertensia paniculata</i>, and <i>Equisetum</i> sp. Two observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Normal time and growth. The flood regime favors growth of balsam poplar, and the community shifts from one that is dominantly willow/alder to one that is deciduous forest. |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2AE

Rooting Depth (cm): Min RV Max
 103 103 103

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 0 0 0

Texture: Highly organic very fine sandy loam

AWC (cm/cm): Min RV Max
 0.25 0.25 0.25

pH: Min RV Max
 8.1 8.1 8.1

Subsurface Layer

Thickness (cm): Min RV Max
 103 103 103

Texture: Very gravelly loamy coarse sand

AWC (cm/cm): Min RV Max
 0.06 0.12 0.17

pH: Min RV Max
 7.4 7.6 7.8

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 5-5 | 50-50 | 40-40 | 10-10 | 3-3 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 3-3 | --- | --- |
| FM (4-24 inches) | --- | 1-4 | --- | --- |
| SL (8-36 inches) | --- | --- | 7-7 | --- |
| ST (>10 feet) | --- | --- | 10-60 | --- |
| TR (<15 feet) | --- | --- | --- | 15-15 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| GABO2 | <i>Galium boreale</i> | 3-3-3 | 100 | 17.3 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EUSI13 | <i>Eurybia sibirica</i> | 4-4-4 | 100 | 20.0 |
| MEPA | <i>Mertensia paniculata</i> | 4-4-4 | 100 | 20.0 |
| HEAL | <i>Hedysarum alpinum</i> | 3-3-3 | 100 | 17.3 |
| EQUIS | <i>Equisetum</i> | 3-3-3 | 100 | 17.3 |
| PAPA8 | <i>Parnassia palustris</i> | 1-1-1 | 100 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 7-7-7 | 100 | 26.5 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| COSES | <i>Cornus sericea ssp. sericea</i> | 60-60-60 | 100 | 77.5 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 20-20-20 | 100 | 44.7 |
| SAPS | <i>Salix pseudomonticola</i> | 15-15-15 | 100 | 38.7 |
| SAGL | <i>Salix glauca</i> | 15-15-15 | 100 | 38.7 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 15-15-15 | 100 | 38.7 |
| SAALA | <i>Salix alaxensis var. alaxensis</i> | 15-15-15 | 100 | 38.7 |
| SAIN3 | <i>Salix interior</i> | 10-10-10 | 100 | 31.6 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 15-15-15 | 100 | 38.7 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Severe use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—15-15-15

Community Phase 2AM

| | | | |
|----------------------------|------------|-----------|------------|
| <u>Rooting Depth (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
| | 88 | 120 | 152 |

Restrictive Feature: Permafrost

Drainage Class: Well drained

Surface Layer

| | | | |
|------------------------|------------|-----------|------------|
| <u>Thickness (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
| | 1 | 2 | 3 |

Texture: Slightly decomposed plant material

| | | | |
|---------------------|------------|-----------|------------|
| <u>AWC (cm/cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
| | 0.35 | 0.35 | 0.35 |

| | | | |
|------------|------------|-----------|------------|
| <u>pH:</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
| | 7.3 | 7.3 | 7.3 |

Subsurface Layer

| | | | |
|------------------------|------------|-----------|------------|
| <u>Thickness (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
| | 87 | 118 | 149 |

Texture: Permanently frozen silt loam

| | | | |
|---------------------|------------|-----------|------------|
| <u>AWC (cm/cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
| | 0.13 | 0.16 | 0.17 |

| | | | |
|------------|------------|-----------|------------|
| <u>pH:</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
| | 7.3 | 7.6 | 7.9 |

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point bars

Structure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-1 | 1-5 | 70-80 | 10-30 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 3-3 | --- | --- | --- |
| FM (4-24 inches) | --- | 2-5 | --- | --- |
| SL (8-36 inches) | --- | --- | 10-10 | --- |
| ST (>10 feet) | --- | --- | 10-65 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-0.1 |
| TM (15-40 feet) | --- | --- | --- | 35-35 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 0.1-1.6-3 | 100 | 12.4 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 45-45-45 | 50 | 47.4 |
| GABO2 | <i>Galium boreale</i> | 5-5-5 | 50 | 15.8 |
| MEPA | <i>Mertensia paniculata</i> | 5-5-5 | 50 | 15.8 |
| SOMU | <i>Solidago multiradiata</i> | 3-3-3 | 50 | 12.2 |
| BORO | <i>Boschniakia rossica</i> | 2-2-2 | 50 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------------|----------------------------------|------------------|-----------------------------|
| COSES | <i>Cornus sericea ssp. sericea</i> | 10-10-10 | 50 | 22.4 |
| ROAC | <i>Rosa acicularis</i> | 8-8-8 | 50 | 20.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------------|----------------------------------|------------------|-----------------------------|
| SAALA | <i>Salix alaxensis var. alaxensis</i> | 3-3-3 | 50 | 12.2 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 65-65-65 | 50 | 57.0 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 10-25-40 | 100 | 50.0 |
| SABE2 | <i>Salix bebbiana</i> | 15-15-15 | 50 | 27.4 |

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Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 35-35-35 | 50 | 41.8 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 35-35-35 | 50 | 41.8 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Other | Other | Winter |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—9-11.5-14

Community Phase HCPC

Rooting Depth (cm): Min RV Max
110 160.5 211

Restrictive Feature: Permafrost

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
2 2.5 3

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
7.2 7.5 7.8

Subsurface Layer

Thickness (cm): Min RV Max
108 158 208

Texture: Sandy loam, slightly decomposed plant material, fine sandy loam, very fine sandy loam

AWC (cm/cm): Min RV Max
0.14 0.23 0.4

pH: : Min RV Max
7 7.8 8.3

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point barsStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-2 | 5-10 | 65-90 | 15-20 | 2-3 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FM (4-24 inches) | --- | 2-4 | --- | --- |
| FT (>24 inches) | --- | 7-7 | --- | --- |
| SM (3-10 feet) | --- | --- | 15-25 | --- |
| ST (>10 feet) | --- | --- | 7-75 | --- |
| TM (15-40 feet) | --- | --- | --- | 5-5 |
| TT (>40 feet) | --- | --- | --- | 10-50 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| BRINP5 | <i>Bromus inermis</i> ssp. <i>pumpellianus</i> var. <i>pumpellianus</i> | 5-5-5 | 50 | 15.8 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 5-15-25 | 100 | 38.7 |
| GABO2 | <i>Galium boreale</i> | 4-6-8 | 100 | 24.5 |
| EQPR | <i>Equisetum pratense</i> | 10-10-10 | 50 | 22.4 |
| BORO | <i>Boschniakia rossica</i> | 1-2-3 | 100 | 14.1 |
| DEGL3 | <i>Delphinium glaucum</i> | 2-2-2 | 50 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 5-6-7 | 100 | 24.5 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 15-40-65 | 100 | 63.2 |
| VIDE | <i>Viburnum edule</i> | 25-32.5-40 | 100 | 57.0 |
| COSES | <i>Cornus sericea</i> ssp. <i>sericea</i> | 15-17.5-20 | 100 | 41.8 |

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Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 2-38.5-75 | 100 | 62.0 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 25-25-25 | 50 | 35.4 |
| SALIX | <i>Salix</i> | 7-7-7 | 50 | 18.7 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 15-15-15 | 50 | 27.4 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 10-10-10 | 50 | 22.4 |
| PIGL | <i>Picea glauca</i> | 5-5-5 | 50 | 15.8 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 50-52.5-55 | 100 | 72.5 |
| PIGL | <i>Picea glauca</i> | 10-10-10 | 50 | 22.4 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 144-175-206 | 14.8-16-16.5 | 78-80-83 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 125-138.5-152 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Severe use | Other | Other | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—13-16.5-20

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana*/*Alnus viridis* ssp. *fruticosa*/*Calamagrostis canadensis*

Ecological Classification ID: F231XY192AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Drainageways of hills, mountains, and escarpments

Slope (percent): Min Max
5 80

Elevation (feet): Min Max
823 2,520

Range of Aspect Direction: North to south (clockwise)

Water Table Depth (cm): Min Max
40 60

Flooding: None

Ponding: None

Runoff: High

Frost-Free Days: Min Max
20 110

Mean Annual Precipitation (inches): Low High
10 28

Mean Annual Air Temperature (°F): Low High
23 28

Monthly Data:

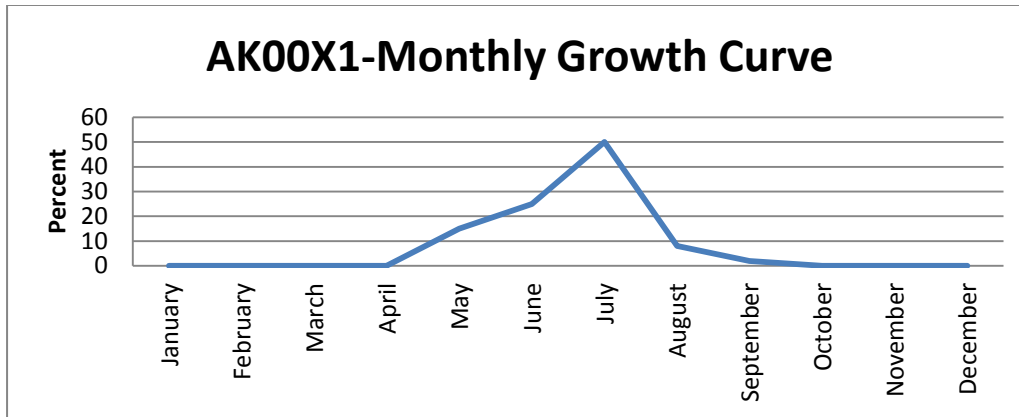
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH6—D31-Boreal tiaga gravelly drainages

D31CF1—D31-Boreal tiaga gravelly drainages

D31TL1—D31-Boreal tiaga gravelly drainages

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels

Dominant Parent Material: Organic material over gravelly alluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
12 16 21

pH: Low RV High
3.8 6.5 8

Effective CEC (me/100g): Low High
16.1 47.3

CEC (me/100g): Min RV Max
3.2 18.3 62


Organic Matter (percent): Low RV High
2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
0.2 0.9 1.27


Plant Community Phases

| | | | |
|---|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY192AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is associated with high-gradient drainageways that are on hills, mountains, and escarpments (average slope is 40%, ranges from 17 to 79%). This ecological site is on various aspects. Communities resulting from disturbances from a flood regime are not present. Differences in the plant communities in this ecological site are presumed to be due to the fire history. The soils in community phase 1.1 are classified as Haplorthels and are composed of organic matter over gravelly alluvium.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div><div>1.0 Reference State</div><div>Boreal woodland loamy frozen drainages steep</div><div>F231XY192AK</div></div><div><div><div>1.1 (HCPC) Mixed spruce-alder-bluejoint-feathermoss woodland</div><div>1.2 b</div><div>1.2 (2FL) Paper birch-mixed spruce-alder-prickly rose-bluejoint-mixed forb forest</div><div>1.2 a</div><div>1.3 (2FE) Alder-mixed tree regeneration-raspberry-red currant-bluejoint-mixed forb scrubland</div><div>1.3 a</div><div>1.1 a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |


| | |
|------------------|---|
| State Narrative: | <p>Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event and the severity of the burn.</p> <p>Due to the steepness of slope and presence of dense paper birch communities, a high-severity fire regime is considered to be the typical fire disturbance for this ecological site. During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost commonly drops out of the soil profile, and the sites become drier. Many pre-fire species likely will regenerate after fire, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|------------------|---|

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Mixed spruce-alder-bluejoint-feathermoss woodland |

| Community Phase Narrative: | |
|---|--|
| <p><i>Picea mariana</i> is the most abundant tree species, and is primarily in the medium and regenerative tree strata. <i>Betula neoalaskana</i> and <i>Picea glauca</i> occur at lower densities (total mature tree cover ~10%). The shrub cover primarily is in the tall and low strata (total shrub cover ~100%), and the most common shrub species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Rosa acicularis</i>, <i>Rubus arcticus</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids (~20% cover) and forbs (~40% cover) are abundant. Common species are <i>Calamagrostis canadensis</i>, various <i>Equisetum</i> sp., and <i>Mertensia paniculata</i>. Moss (~50% cover) and leaf litter (~50% cover) make up the dominant ground cover. The moss mat consists primarily of <i>Hylocomium splendens</i> mixed with <i>Sphagnum</i> sp. Two observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Fire. For this ecological site, this phase has the longest fire return interval. |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Paper birch-mixed spruce-alder-prickly rose-bluejoint-mixed forb forest |

| Community Phase Narrative: | |
|---|--|
| <p><i>Betula neoalaskana</i> is the most abundant tree species, and is primarily in the tall and medium tree strata. <i>Picea mariana</i> and <i>Picea glauca</i> occur in lower densities (total mature tree cover ~25%). The shrub cover primarily is in the tall shrub stratum (total shrub cover ~75%), and the most common shrub species are <i>Alnus viridis</i> ssp. <i>fruticosa</i> and <i>Rosa acicularis</i>. Graminoids are limited (~10% cover). Forbs are abundant and highly diverse (~50% cover). Common species include <i>Calamagrostis canadensis</i>, various <i>Equisetum</i> sp., and <i>Mertensia paniculata</i>. Leaf litter (~60% cover) and moss (~25% cover) make up the dominant ground cover, and the moss mat is primarily <i>Hylocomium splendens</i> mixed with <i>Sphagnum</i> sp. Five observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. |
| 1.2b | Normal time and growth without fire. Paper birch is replaced by maturing spruce woodland. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.3. |

| | | | |
|-------------------------|--|-----------------------|--|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Alder-mixed tree regeneration-raspberry-red currant-bluejoint-mixed forb scrubland |

| Community Phase Narrative: | |
|--|---|
| <p><i>Betula neoalaskana</i>, <i>Picea mariana</i>, and <i>Picea glauca</i> occur in low densities and are primarily in the regenerative tree stratum (~5% total tree cover). The shrub cover primarily is in the tall, medium, and low shrub strata (total shrub cover ~90%), and the most common shrub species are <i>Alnus viridis ssp. fruticosa</i>, <i>Salix bebbiana</i>, <i>Rubus idaeus</i>, <i>Rosa acicularis</i>, and <i>Ribes triste</i>. Graminoids are limited (~15% cover), and forbs are abundant and highly diverse (~40% cover). Common species include <i>Calamagrostis canadensis</i>, various <i>Equisetum sp.</i>, <i>Mertensia paniculata</i>, <i>Polygonum alpinum</i>, <i>Cystopteris fragilis</i>, and <i>Boschniakia rossica</i>. Leaf litter (~70% cover) and moss (~25% cover) make up the dominant ground cover, and the moss mat is composed primarily of <i>Hylocomium splendens</i> mixed with <i>Sphagnum sp.</i> Four observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Normal time and growth without fire. Paper birch and spruce mature into woodland. |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
 58 76.5 95

Restrictive Features: None recorded

Drainage Class: Poorly drained

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Surface Layer

Thickness (cm): Min RV Max
6 8.5 11

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
6.6 6.9 7.2

Subsurface Layer

Thickness (cm): Min RV Max
52 68 84

Texture: Extremely channery coarse sandy loam, extremely channery silt loam, extremely channery sandy loam, extremely flaggy sandy loam

AWC (cm/cm): Min RV Max
0.03 0.07 0.1

pH: Min RV Max
7.2 7.6 8

Influencing Water Features

NWI Code: R4SB5

NWI Description: Riverine, Intermittent, Stream Bed, Mud

Rosgen Classification: Steep, entrenched, cascading step-pools; very steep, deeply entrenched, debris transport streams

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-3 | 20-35 | 60-75 | 1-15 | 0-5 | 0-10 | 0-1 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 25-25 | --- | --- | --- |
| FD (<4 inches) | --- | 15-15 | --- | --- |
| FM (4-24 inches) | --- | 5-5 | --- | --- |
| FT (>24 inches) | --- | 7-7 | --- | --- |
| SD (<8 inches) | --- | --- | 3-5 | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| SM (3-10 feet) | --- | --- | 3-80 | --- |
| ST (>10 feet) | --- | --- | 7-7 | --- |
| TS (<15 feet) | --- | --- | --- | 0.1-0.1 |

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Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 10-17.5-25 | 50 | 29.6 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 25-25-25 | 25 | 25.0 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| LYAN2 | <i>Lycopodium annotinum</i> | 15-15-15 | 25 | 19.4 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| GYDR | <i>Gymnocarpium dryopteris</i> | 3-14-25 | 50 | 26.5 |
| EQAR | <i>Equisetum arvense</i> | 5-10-15 | 50 | 22.4 |
| CYFR2 | <i>Cystopteris fragilis</i> | 2-8.5-15 | 50 | 20.6 |
| MEPA | <i>Mertensia paniculata</i> | 2-5.7-10 | 75 | 20.6 |
| EQPR | <i>Equisetum pratense</i> | 5-7.5-10 | 50 | 19.4 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 3-4-5 | 50 | 14.1 |
| ARTI | <i>Artemisia tilesii</i> | 0.1-2.6-5 | 50 | 11.3 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| POAL11 | <i>Polygonum alpinum</i> | 0.1-3-7 | 75 | 15.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| LIBO3 | <i>Linnaea borealis</i> | 5-5-5 | 25 | 11.2 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| RUID | <i>Rubus idaeus</i> | 3-12.7-25 | 75 | 30.8 |
| RITR | <i>Ribes triste</i> | 5-8.3-10 | 75 | 25.0 |
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 50 | 15.8 |
| SPST3 | <i>Spiraea stevenii</i> | 10-10-10 | 25 | 15.8 |
| VIED | <i>Viburnum edule</i> | 10-10-10 | 25 | 15.8 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 80-80-80 | 25 | 44.7 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 25-53.3-70 | 75 | 63.2 |
| BEOC2 | <i>Betula occidentalis</i> | 7-7-7 | 25 | 13.2 |
| SABE2 | <i>Salix bebbiana</i> | 1-2-3 | 75 | 12.2 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 0.1-2.7-5 | 75 | 14.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 2-3.5-5 | 50 | 13.2 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Betula neoalaskana</i> | 68-68-68 | 5.1-5-5.6 | 24-26-28 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 0-0-0 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | | Winter |

Notable Plants: None observed

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—17-20-24

Community Phase 2FL



Rooting Depth (cm): Min RV Max
 -19 45.4 91

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
 1 18 39

Texture: Peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 4 5.6 6.5

Subsurface Layer

Thickness (cm): Min RV Max
 -20 27.4 52

Texture: Extremely channery silt loam, extremely stony silt loam

AWC (cm/cm): Min RV Max
 0.12 0.21 0.25

pH: Min RV Max
 5.3 6.3 7.3

Influencing Water Features

NWI Code: R3UB1, R4SB4

NWI Description: Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel; Riverine, Intermittent, Stream Bed, Sand

Rosgen Classification: Steep, entrenched, cascading step-pools; very steep, deeply entrenched, debris transport streams

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-20 | 5-40 | 10-95 | 2-25 | 0-10 | 0-1 | 0-10 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 35-35 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-1 | --- | --- |
| SD (<8 inches) | --- | --- | 2-5 | --- |
| SL (8-36 inches) | --- | --- | 2-2 | --- |
| SM (3-10 feet) | --- | --- | 5-5 | --- |
| TR (<15 feet) | --- | --- | --- | 3-3 |
| TS (<15 feet) | --- | --- | --- | 2-2 |
| TM (15-40 feet) | --- | --- | --- | 15-5 |
| TT (>40 feet) | --- | --- | --- | 1-10 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 7-17.3-35 | 60 | 32.2 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 20 | 17.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------------|----------------------------------|------------------|-----------------------------|
| HUSES | <i>Huperzia selago var. selago</i> | 10-10-10 | 20 | 14.1 |
| ORSE | <i>Orthilia secunda</i> | 10-10-10 | 20 | 14.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| EQPR | <i>Equisetum pratense</i> | 10-21.7-45 | 60 | 36.1 |
| EQAR | <i>Equisetum arvense</i> | 10-16.7-25 | 60 | 31.6 |
| PYGR | <i>Pyrola grandiflora</i> | 18-18-18 | 20 | 19.0 |
| MEPA | <i>Mertensia paniculata</i> | 2-4-5 | 60 | 15.5 |
| EQSY | <i>Equisetum sylvaticum</i> | 10-10-10 | 20 | 14.1 |
| GELI2 | <i>Geocaulon lividum</i> | 3-4-5 | 40 | 12.6 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 7-7-7 | 20 | 11.8 |
| GYDR | <i>Gymnocarpium dryopteris</i> | 5-5-5 | 20 | 10.0 |
| DRYOP | <i>Dryopteris</i> | 5-5-5 | 20 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-9-15 | 60 | 23.2 |
| ARRU | <i>Arctostaphylos rubra</i> | 5-7.5-10 | 40 | 17.3 |
| RUCH | <i>Rubus chamaemorus</i> | 10-10-10 | 20 | 14.1 |
| LIBO3 | <i>Linnaea borealis</i> | 2-2.5-3 | 40 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 2-6-10 | 40 | 15.5 |
| VIDE | <i>Viburnum edule</i> | 2-4-5 | 60 | 15.5 |
| ROAC | <i>Rosa acicularis</i> | 2-4-5 | 60 | 15.5 |
| RITR | <i>Ribes triste</i> | 5-5-5 | 40 | 14.1 |
| RIHU | <i>Ribes hudsonianum</i> | 5-5-5 | 20 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 10-12.5-15 | 40 | 22.4 |
| RITR | <i>Ribes triste</i> | 15-15-15 | 20 | 17.3 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-5-5 | 20 | 10.0 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 20-43.8-80 | 80 | 59.2 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 20-20-20 | 20 | 20.0 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 15-15-15 | 20 | 17.3 |
| SABE2 | <i>Salix bebbiana</i> | 10-10-10 | 20 | 14.1 |
| SAPU15 | <i>Salix pulchra</i> | 10-10-10 | 20 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 3-4.3-5 | 60 | 16.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-15-25 | 80 | 34.6 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 40 | 14.1 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-20-30 | 40 | 28.3 |
| PIGL | <i>Picea glauca</i> | 15-15-15 | 20 | 17.3 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|---------------------------|
| <i>Picea glauca</i> | 187-187-187 | 9-9-9 | 49-49-49 | 1 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 10-35-60 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | | Winter |
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Other | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—5; plant species per stop (min-avg-max)—15-25.6-37

Community Phase HCPC



| <u>Rooting Depth (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|----------------------------|------------|-----------|------------|
| | 66 | 78 | 90 |

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Surface Layer

Thickness (cm): Min RV Max
4 4 4

Texture: Peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
5.4 6 6.7

Subsurface Layer

Thickness (cm): Min RV Max
62 74 86

Texture: Permanently frozen very gravelly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam

AWC (cm/cm): Min RV Max
0.09 0.12 0.15

pH: Min RV Max
6.1 6.4 6.8

Influencing Water Features

NWI Code: R4SB4, R4SB5

NWI Description: Riverine, Intermittent, Stream Bed, Sand; Riverine, Intermittent, Stream Bed, Mud

Rosgen Classification: Steep, entrenched, cascading step-pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-2 | 50-50 | 45-50 | 8-15 | 2-10 | 0-3 | 5-5 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 15-3 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-7 | --- | --- |
| FM (4-24 inches) | --- | 0.01-25 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-5 | --- |
| SL (8-36 inches) | --- | --- | 0.01-3 | --- |
| SM (3-10 feet) | --- | --- | 1-1 | --- |
| ST (>10 feet) | --- | --- | 60-60 | --- |
| TR (<15 feet) | --- | --- | --- | 1-2 |
| TM (15-40 feet) | --- | --- | --- | 10-10 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 100 | 38.7 |
| CAREX | <i>Carex</i> | 3-3-3 | 50 | 12.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| WIPH | <i>Wilhelmsia physodes</i> | 7-7-7 | 50 | 18.7 |
| LYAN2 | <i>Lycopodium annotinum</i> | 7-7-7 | 50 | 18.7 |
| EQSC | <i>Equisetum scirpoides</i> | 3-3-3 | 50 | 12.2 |
| RALA | <i>Ranunculus lapponicus</i> | 3-3-3 | 50 | 12.2 |
| MOUN2 | <i>Moneses uniflora</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQPR | <i>Equisetum pratense</i> | 30-30-30 | 50 | 38.7 |
| EQAR | <i>Equisetum arvense</i> | 25-25-25 | 50 | 35.4 |
| MEPA | <i>Mertensia paniculata</i> | 10-10-10 | 50 | 22.4 |
| BORI2 | <i>Boykinia richardsonii</i> | 2-2-2 | 50 | 10.0 |
| PEFR5 | <i>Petasites frigidus</i> | 2-2-2 | 50 | 10.0 |
| LYAN2 | <i>Lycopodium annotinum</i> | 2-2-2 | 50 | 10.0 |
| GELI2 | <i>Geocaulon lividum</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 10-10-10 | 50 | 22.4 |
| RUAR | <i>Rubus arcticus</i> | 3-4-5 | 100 | 20.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 0-5-10 | 100 | 22.4 |
| RITR | <i>Ribes triste</i> | 10-10-10 | 50 | 22.4 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 10-10-10 | 50 | 22.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 7-7-7 | 50 | 18.7 |
| RIGL | <i>Ribes glandulosum</i> | 3-3-3 | 50 | 12.2 |
| LEGR | <i>Ledum groenlandicum</i> | 2-2-2 | 50 | 10.0 |
| SAPU15 | <i>Salix pulchra</i> | 2-2-2 | 50 | 10.0 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 60-62.5-65 | 100 | 79.1 |
| SABE2 | <i>Salix bebbiana</i> | 15-15-15 | 50 | 27.4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 1-1.5-2 | 100 | 12.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-7.5-10 | 100 | 27.4 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—22-26.5-31

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana*/*Salix-Ledum groenlandicum*

Ecological Classification ID: F231XY193AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Drainageways of hills and plains

Slope (percent): Min Max
1 15

Elevation (feet): Min Max
1,014 3,051

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max
5 20

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max
20 110

Mean Annual Precipitation (inches): Low High
10 28

Mean Annual Air Temperature (°F): Low High
19 28

Monthly Data:

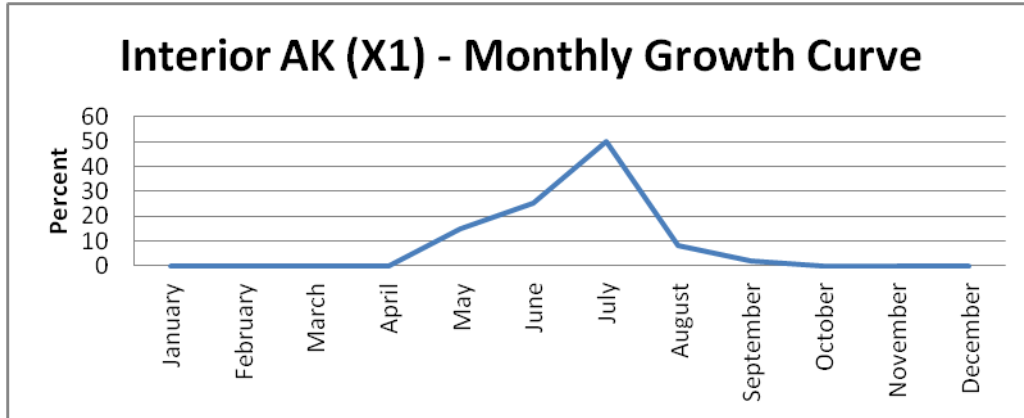
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH1—D31-Boreal taiga silty drainages, frozen
 D31HL2—D31-Boreal taiga silty drainages, frozen
 D31LB1—D31-Boreal taiga silty drainages, frozen
 D31TH1—D31-Boreal taiga silty drainages, frozen
 D31UC3—D31-Boreal taiga silty drainages, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Fluvaquentic Aquorthels

Dominant Parent Material: Organic material over loamy alluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 15 31 59

pH: Low RV High
 3.4 6 7.4

Effective CEC (me/100g): Low High
 14.2 40


CEC (me/100g): Min RV Max
 4 18.5 62

Organic Matter (percent): Low RV High
 2 22.5 80


Bulk Density (1/3-Bar): Min RV Max
 0.9 1 1.11

Plant Community Phases


| | | | |
|---|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY193AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is associated with low-gradient drainageways on hills (slope averages 6%, but ranges from 2 to 13%). Communities based on disturbances from an intense flood regime were not observed. Differences in plant communities in this ecological site are presumed to be a result of the fire history. As sites progress from community phase 1.3 to 1.1, the surface organic matter increases and a mixed spruce woodland develops. Permafrost remains in the soil profile after fire disturbances. The soils in community phase 1.1 are classified as Aquorthels and are composed of organic matter over loamy alluvium.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div>Boreal woodland loamy frozen drainages</div><div>F231XY193AK</div><div><div><div>1.1 (HCPC) Mixed spruce-alder-tealeaf willow-mixed ericaceous-bluejoint-<i>Sphagnum</i> woodland</div><div>1.2 b</div><div>1.2 (2FL) Paper birch-mixed spruce-alder-tealeaf willow-mixed moss woodland</div><div>1.2 a</div><div>1.3 (2FE) Mixed willow-mixed ericaceous scrub-bluejoint-mixed moss scrubland</div><div>1.3 a</div><div>1.1 a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |

| | | | |
|--------------------------------|---|------------------------------|---|
| <p>State Narrative:</p> | <p>Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event and the severity of the burn.</p> <p>Fires are thought to be typically low-severity events. During a low-severity fire (phase 1.3), minimal proportions of the organic mat are consumed and mineral soils typically are not exposed. Permafrost typically remains in the soil profile, and water commonly perches on it. Graminoids and scrubs quickly recolonize and become dominant as a result of the below-ground root reserves that were not consumed in the fire event. Because black spruce has semi-serotinous cones, it quickly reestablishes after fire events. With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.2.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |
| <p>Phase 1.1</p> |  | | |
| <p>Community Phase Number:</p> | <p>1.1</p> | <p>Community Phase Name:</p> | <p>Mixed spruce-alder-tealeaf willow-mixed ericaceous-bluejoint-Sphagnum woodland</p> |

| Community Phase Narrative: | |
|---|--|
| <p><i>Picea glauca</i> and <i>Picea mariana</i> are the dominant tree species, and they are primarily in the medium and tall tree strata. <i>Betula neoalaskana</i> are present in lower densities (total mature tree cover ~10%). The shrub cover is distributed among all shrub strata (total shrub cover ~75%), and the most common shrub species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Salix pulchra</i>, <i>Vaccinium uliginosum</i>, <i>Ledum groenlandicum</i>, <i>Rubus chamaemorus</i>, and <i>Vaccinium vitis-idaea</i>. Neither graminoids (~10% cover) nor forbs (~5% cover) are abundant, but <i>Calamagrostis Canadensis</i> commonly is present. Moss (~50% cover) and leaf litter (~20% cover) are the most extensive ground cover, and the moss mat is composed primarily of <i>Sphagnum</i> species. Five observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Fire. For this ecological site, this phase has the longest fire return interval. |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Paper birch-mixed spruce-alder-tealeaf willow-mixed moss woodland |

| Community Phase Narrative: | |
|--|--|
| <p><i>Betula neoalaskana</i> is the dominant tree species, and it is primarily in the medium and regenerative tree strata. <i>Picea glauca</i> and <i>Picea mariana</i> are present in lower densities (total mature tree cover ~10%). The shrub cover is primarily in the tall, medium, and low shrub strata (total shrub cover ~65%), and the most common shrub species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Salix pulchra</i>, and <i>Vaccinium uliginosum</i>. Graminoids (30% cover) are abundant, and a common species is <i>Calamagrostis canadensis</i>. Leaf litter (~55% cover) and moss (~20% cover) make up the most extensive ground cover. The moss is a mixture of various species, including <i>Sphagnum</i> sp., <i>Hylocomium splendens</i>, and <i>Pleurozium schreberi</i>. Seven observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. |
| 1.2b | Normal time and growth without fire. Paper birch is replaced by a mixture of maturing black spruce and/or white spruce. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.3. |

| | | | |
|-------------------------|--|-----------------------|--|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Mixed willow-mixed ericaceous scrub-bluejoint-mixed moss scrubland |

| Community Phase Narrative: | |
|---|---|
| <p><i>Picea mariana</i> and <i>Betula neoalaskana</i> are common as saplings, but neither occurs in high densities (~10% total cover). The shrub cover is distributed among the tall, medium, and low shrub strata (total shrub cover ~60%). Common species include <i>Salix</i> sp., <i>Vaccinium uliginosum</i>, and <i>Ledum groenlandicum</i>. Graminoids (~55% cover) and forbs (~20% cover) are abundant. Common species are <i>Calamagrostis canadensis</i>, <i>Chamerion angustifolium</i>, <i>Petasites frigidus</i>, and various <i>Equisetum</i> sp. Leaf litter (~70% cover) and moss (~30% cover) make up extensive ground cover. The moss is a mixture of various species, including <i>Sphagnum</i> sp., <i>Polytrichum</i> sp., and <i>Bryum</i> sp. Two observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Normal time and growth without fire. Mixed spruce and/or paper birch develop into woodland. |

Dynamic Soil Properties within Representative Rooting Depth
Community Phase 2FE



Rooting Depth (cm): Min RV Max
 46 65 75

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 0 0 0

Texture: Slightly decomposed plant material, very fine sandy loam

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AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
5.5 6.4 7.3

Subsurface Layer

Thickness (cm): Min RV Max
46 65 75

Texture: Mucky peat, very fine sandy loam

AWC (cm/cm) : Min RV Max:
0.25 0.28 0.35

pH: Min RV Max
5.8 6.4 7.4

Influencing Water Features

NWI Code: R3UB3

NWI Description: Riverine, Upper Perennial, Unconsolidated Bottom, Mud

Rosgen Classification: Moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-2 | 25-30 | 70-70 | 10-10 | 1-5 | 0-0 | 10-15 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 55-55 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-0.01 | --- | --- |
| FM (4-24 inches) | --- | 0.01-10 | --- | --- |
| FT (>24 inches) | --- | 5-5 | --- | --- |
| SD (<8 inches) | --- | --- | 5-5 | --- |
| SL (8-36 inches) | --- | --- | 1-8 | --- |
| SM (3-10 feet) | --- | --- | 15-5 | --- |
| TR (<15 feet) | --- | --- | --- | 7-8 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 55-55-55 | 100 | 74.2 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQPA | <i>Equisetum palustre</i> | 25-25-25 | 50 | 35.4 |
| PEFR5 | <i>Petasites frigidus</i> | 10-10-10 | 50 | 22.4 |
| RALA | <i>Ranunculus lapponicus</i> | 3-3-3 | 50 | 12.2 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 5-5-5 | 50 | 15.8 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-5-5 | 50 | 15.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| PEFL15 | <i>Pentaphylloides floribunda</i> | 15-15-15 | 50 | 27.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-5.5-10 | 100 | 23.5 |
| LEGR | <i>Ledum groenlandicum</i> | 2-5-8 | 100 | 22.4 |
| B EGL | <i>Betula glandulosa</i> | 8-8-8 | 50 | 20.0 |
| SPST3 | <i>Spiraea stevenii</i> | 3-3-3 | 50 | 12.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 15-15-15 | 50 | 27.4 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-5-5 | 50 | 15.8 |
| SACA4 | <i>Salix candida</i> | 3-3-3 | 50 | 12.2 |
| SAPS | <i>Salix pseudomonticola</i> | 2-2-2 | 50 | 10.0 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 15-15-15 | 50 | 27.4 |
| SAAR3 | <i>Salix arbusculoides</i> | 15-15-15 | 50 | 27.4 |
| SABE2 | <i>Salix bebbiana</i> | 10-10-10 | 50 | 22.4 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 10-10-10 | 50 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 3-5-7 | 100 | 22.4 |
| BENE4 | <i>Betula neoalaskana</i> | 8-8-8 | 50 | 20.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|--------------|--------------------------|---------------------------|---------------|
| Moderate use | Willows | Moose | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: *Salix candida*

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—22-22.5-23

Community Phase 2FL



Rooting Depth (cm): Min RV Max
29 63.1 106

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 2.4 7

Texture: Silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.25 0.31 0.35

pH: Min RV Max
4.8 5.6 6.5

Subsurface Layer

Thickness (cm): Min RV Max
29 60.7 99

Texture: Permanently frozen silt loam, silt loam, mucky peat, very fine sandy loam

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AWC (cm/cm): Min RV Max
0.12 0.27 0.4

pH: Min RV Max
4.5 5.9 6.8

Influencing Water Features

NWI Code: R3UB3, R4SB5, R4SB7, R5UB3

NWI Description: Riverine, Upper Perennial, Unconsolidated Bottom, Mud; Riverine, Intermittent, Stream Bed, Mud; Riverine, Intermittent, Stream Bed, Vegetated; Riverine, Unknown Perennial, Unconsolidated Bottom, Mud

Rosgen Classification: Steep, entrenched, cascading step-pools; moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools; entrenched, meandering riffle/pool channel of low gradient, with high W/D ratio

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 0-20 | 1-50 | 20-85 | 2-35 | 0-60 | 0-3 | 1-30 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 20-3 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-0.01 | --- | --- |
| FM (4-24 inches) | --- | 1-2 | --- | --- |
| FT (>24 inches) | --- | 0-0 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-0.01 | --- |
| SL (8-36 inches) | --- | --- | 0.01-0.01 | --- |
| SM (3-10 feet) | --- | --- | 1-65 | --- |
| ST (>10 feet) | --- | --- | 1-1 | --- |
| TR (<15 feet) | --- | --- | --- | 0.01-1 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|------------------------------|------------------|-------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 10-15-20 | 29 | 20.7 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 15-15-15 | 14 | 14.6 |
| LUPA4 | <i>Luzula parviflora</i> | 10-10-10 | 14 | 12.0 |
| CABI5 | <i>Carex bigelowii</i> | 3-4-5 | 29 | 10.7 |

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Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 10-26.2-45 | 57 | 38.7 |
| FEAL | <i>Festuca altaica</i> | 5-10-15 | 29 | 16.9 |
| ARLA2 | <i>Arctagrostis latifolia</i> | 15-15-15 | 14 | 14.6 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| COPA28 | <i>Comarum palustre</i> | 1-10.5-20 | 29 | 17.3 |
| EQPA | <i>Equisetum palustre</i> | 15-15-15 | 14 | 14.6 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 0.1-3.7-10 | 43 | 12.6 |
| ANPO | <i>Andromeda polifolia</i> | 10-10-10 | 14 | 12.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 0-4.5-15 | 57 | 16.0 |
| SAAR3 | <i>Salix arbusculoides</i> | 15-15-15 | 14 | 14.6 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 3-6.5-10 | 29 | 13.6 |
| LEGR | <i>Ledum groenlandicum</i> | 1-3.7-8 | 43 | 12.5 |
| SAPU15 | <i>Salix pulchra</i> | 10-10-10 | 14 | 12.0 |
| B EGL | <i>Betula glandulosa</i> | 8-8-8 | 14 | 10.7 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 5-20-65 | 57 | 33.8 |
| SAHA | <i>Salix hastata</i> | 60-60-60 | 14 | 29.3 |
| SAPS8 | <i>Salix pseudomyrsinites</i> | 15-15-15 | 14 | 14.6 |
| SASC | <i>Salix scouleriana</i> | 15-15-15 | 14 | 14.6 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 3-6.5-10 | 29 | 13.6 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 2-6-10 | 29 | 13.1 |
| SABE2 | <i>Salix bebbiana</i> | 3-4-5 | 29 | 10.7 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 1-24.8-50 | 57 | 37.6 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 0-6.3-15 | 57 | 18.9 |
| PIMA | <i>Picea mariana</i> | 0.1-2.4-5 | 43 | 10.1 |
| PIGL | <i>Picea glauca</i> | 1-3-5 | 29 | 9.3 |

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Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|---------------------------|---------------------------------|------------------|-----------------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 5-10-15 | 43 | 20.7 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> <u>Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------------|
| <i>Picea glauca</i> | 24-45-58 | 1.3-2-2.1 | 12-16-19 | 3 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 20-25.5-31 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Moose | Summer |
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—7; plant species per stop (min-avg-max)—6-18.3-26

Community Phase HCPC



| <u>Rooting Depth (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|----------------------------|------------|-----------|------------|
| | 30 | 48.8 | 67 |

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

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Surface Layer

Thickness (cm): Min RV Max
0 9.2 24

Texture: Peat, silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.25 0.33 0.35

pH: Min RV Max
4.8 5.6 6.8

Subsurface Layer

Thickness (cm): Min RV Max
30 39.6 43

Texture: Permanently frozen silt loam, silt, silt loam, very fine sandy loam

AWC (cm/cm): Min RV Max
0.24 0.26 0.33

pH: Min RV Max
5 6.2 7.2

Influencing Water Features

NWI Code: R3UB3, PSS1

NWI Description: Riverine, Upper Perennial, Unconsolidated Bottom, Mud; Palustrine, Scrub-Shrub, Broad-Leaved Deciduous

Rosgen Classification: Steep, entrenched, cascading step-pools; moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-5 | 25-85 | 0-40 | 1-10 | 0-20 | 0-0 | 10-15 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 35-35 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-0.01 | --- | --- |
| SD (<8 inches) | --- | --- | 1-1 | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| SM (3-10 feet) | --- | --- | 15-5 | --- |
| ST (>10 feet) | --- | --- | 10-5 | --- |
| TR (<15 feet) | --- | --- | --- | 1-1 |
| TM (15-40 feet) | --- | --- | --- | 2-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 3-6.5-10 | 40 | 16.1 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 0.1-3.6-7 | 40 | 11.9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 25-30-35 | 40 | 34.6 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| COPA28 | <i>Comarum palustre</i> | 10-12.5-15 | 40 | 22.4 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-6.8-20 | 100 | 26.1 |
| RUCH | <i>Rubus chamaemorus</i> | 1-2.5-5 | 80 | 14.1 |
| RUARA2 | <i>Rubus arcticus</i> ssp. <i>acaulis</i> | 10-10-10 | 20 | 14.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 2-8.4-20 | 100 | 29.0 |
| LEGR | <i>Ledum groenlandicum</i> | 2-5.8-15 | 80 | 21.4 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 1-5.3-10 | 60 | 17.9 |
| SAPU15 | <i>Salix pulchra</i> | 15-15-15 | 20 | 17.3 |
| SPST3 | <i>Spiraea stevenii</i> | 1-2.3-5 | 60 | 11.8 |
| BENA | <i>Betula nana</i> | 5-5-5 | 20 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 10-15-20 | 60 | 30.0 |
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 2-10.7-15 | 60 | 25.3 |
| BENA | <i>Betula nana</i> | 3-11.5-20 | 40 | 21.4 |
| B EGL | <i>Betula glandulosa</i> | 5-10-15 | 40 | 20.0 |
| ROAC | <i>Rosa acicularis</i> | 15-15-15 | 20 | 17.3 |
| SAAR3 | <i>Salix arbusculoides</i> | 10-10-10 | 20 | 14.1 |
| SAPS | <i>Salix pseudomonticola</i> | 5-5-5 | 20 | 10.0 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 5-12.5-20 | 40 | 22.4 |
| ALINT | <i>Alnus incana</i> ssp. <i>tenuifolia</i> | 20-20-20 | 20 | 20.0 |
| SAAR3 | <i>Salix arbusculoides</i> | 10-10-10 | 20 | 14.1 |
| SABE2 | <i>Salix bebbiana</i> | 10-10-10 | 20 | 14.1 |
| SAPU15 | <i>Salix pulchra</i> | 5-5-5 | 20 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 1-4-8 | 80 | 17.9 |
| PIGL | <i>Picea glauca</i> | 12-12-12 | 20 | 15.5 |
| BENE4 | <i>Betula neoalaskana</i> | 1-3-5 | 40 | 11.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIMA | <i>Picea mariana</i> | 1-8.2-15 | 80 | 25.7 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 15-15-15 | 20 | 17.3 |
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 20 | 14.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Picea glauca</i> | 15-64-91 | 5.8-6-6.2 | 30-33-37 | 3 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 25-97.5-170 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|--------------|--------------------------|---------------------------|---------------|
| Moderate use | Other woody plants | Moose | Summer |
| Moderate use | Other woody plants | Moose | Unknown |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Unknown |
| Slight use | Willows | Moose | Winter |

Notable Plants: None observed

Species Richness: Number of stops—5; plant species per stop (min-avg-max)—17-21.8-30

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Betula neoalaskana/Alnus incana ssp. tenuifolia*

Ecological Classification ID: F231XY195AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Drainageways of hills, low flood plains, mountains, and terraces

Slope (percent): Min Max

1 10

Elevation (feet): Min Max

646 1,358

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

5 75

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max

75 110

Mean Annual Precipitation (inches): Low High

9 15

Mean Annual Air Temperature (°F): Low High

23 28

Monthly Data:

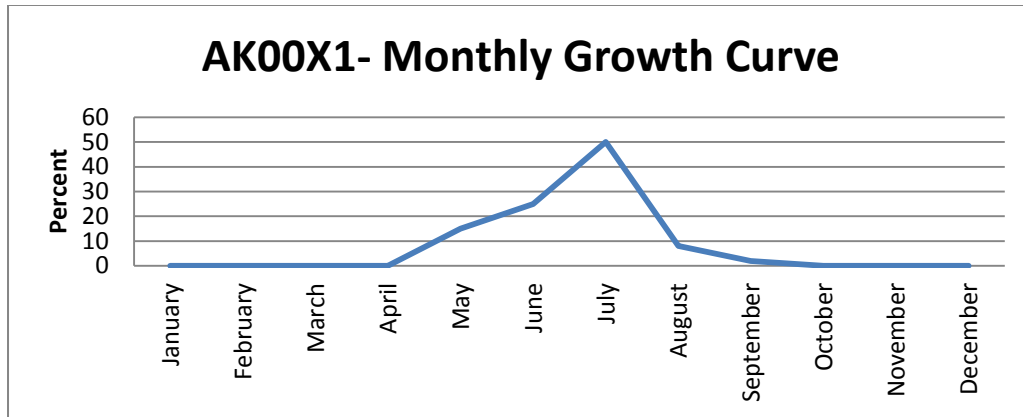
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31TE1—D31-Boreal forest silty drainages, frozen

D31TE2—D31-Boreal forest silty drainages, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Fluvaquentic Aquorthels

Dominant Parent Material: Organic material over gravelly alluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 15 30 47

pH: Low RV High
 4.5 6.4 7.9

Effective CEC (me/100g): Low High
 14 29

CEC (me/100g): Min RV Max
 3.2 31.8 88.2


Organic Matter (percent): Low RV High
 2 29.3 80

Bulk Density (1/3-Bar): Min RV Max
 1 1.1 1.17

Plant Community Phases

| | | | |
|--|-------------|-------------|-----------|
| Ecological Site Description ID: | R231XY195AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is in a low-gradient drainageway that dissected hills, mountains, and plains. (<15% slopes). Sites are characterized by a dense shrub canopy directly adjacent to flowing water. Trees are present, but the climax phase does not have sufficient tree cover to qualify as woodland (<10% tree cover). Because the drainageway does not have unvegetated bars, flooding is not included as a disturbance regime. Fire is the dominant disturbance regime. The soils in community phase 1.1 are classified as Cryofluvents and are composed of organic material over gravelly alluvium. Fire is a disturbance regime that resulted in three phases. No alternate states were observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div>Boreal scrub gravelly drainages</div><div>R231XY195AK</div><div><div><div>1.1(HCPC) Alder-mixed willow-white spruce-grass-horsetail-moss scrubland</div><div>1.1b</div><div>1.2 (2FL) Alder-mixed willow-grass-scrubland</div><div>1.2a</div><div>1.3 (2FE) mixed grass-mixed forb herbaceous community</div><div>1.3b</div><div>1.2b</div><div>1.1a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |

| | |
|------------------|--|
| State Narrative: | <p>For the climax phase, the dominant vegetation is a mixture of trees, shrubs, graminoids, forbs, and moss. Trees are in the tall, medium, stunted, and regenerative strata. The shrubs are in the tall, medium, low, and dwarf strata. The climax and late phase communities are very similar, but they are separated based on the size/age of trees.</p> <p>During a low-severity fire, minimal proportions of the organic mat are consumed and mineral soils typically are not exposed. Graminoids and scrubs quickly recolonize and become dominant as a result of the below-ground root reserves that are not consumed in the fire event. Because black spruce has semi-serotinous cones, it quickly reestablishes after fire events.</p> <p>During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|------------------|--|

| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Alder-mixed willow-white spruce-grass-horsetail-moss scrubland |

| Community Phase Narrative: | |
|---|--|
| <p>The tree cover primarily is in the tall and medium strata. The most common tree species is <i>Picea glauca</i>, but <i>Betula neoalaskana</i> and <i>Populus balsamifera</i> are also present. <i>Picea glauca</i> averages 90 years of age, and the diameter at breast height averages 5.7 inches. Medium shrubs are most abundant, but tall, low, and dwarf species are also common. The most common tall shrubs are <i>Alnus sp.</i> and <i>Salix sp.</i>, the most common medium shrubs are <i>Salix sp.</i>, and the most common low shrub is <i>Vaccinium uliginosum</i>. Graminoids and forbs are abundant, totally more than 25% cover. A common graminoid is <i>Calamagrostis canadensis</i>, and a common forb is <i>Equisetum sp.</i> Moss is an abundant ground cover.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | High-intensity fire. No field observations. Under a high-severity fire regime, the resulting community would likely be dominantly herbaceous plants. |
| 1.1b | Low-intensity fire. Evidence of fire (i.e., standing burned trees and charcoal) in late fire phase areas. It is unclear whether a fire typically resets the community (high-intensity fire) or merely removes isolated pockets of shrubs and white spruce (low-intensity fire). Under a low-severity fire regime, the resulting community would likely resemble that of community phase 1.2. |

| | |
|-----------|--|
| Phase 1.2 |  |
|-----------|--|

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| | | | |
|--|---|-----------------------|------------------------------------|
| Community Phase Number: | 1.2 | Community Phase Name: | Alder-mixed willow-grass-scrubland |
| Community Phase Narrative: | | | |
| <p>The tree cover is primarily in the medium and regenerative strata and is less abundant than that of the climax phase. The dominant tree species are <i>Picea glauca</i>, <i>Betula neoalaskana</i>, and <i>Populus balsamifera</i>. The dominant shrub stratum is tall shrubs, but medium, low, and dwarf shrubs are also common. The most common tall shrubs are <i>Alnus</i> and <i>Salix</i> sp. The most common medium and low shrubs is <i>Salix</i> sp. Graminoids and forbs are abundant, totally more than 25% cover. A common graminoid is <i>Calamagrostis canadensis</i>, and common forbs are <i>Equisetum</i> sp. and <i>Parnassia palustris</i>. The moss cover is less abundant than that of the climax phase.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Fire may occur within this phase, but it was not observed. | | |
| 1.2b | Normal time and growth without fire. The difference in the vegetation between the late and climax phases is minimal. As time progresses, late phase vegetation will eventually develop a limited amount of tall <i>Picea glauca</i> and the shrub understory will shift from tall to medium shrubs. | | |

| | | | |
|--|-----------------------------|-----------------------|---|
| Phase 1.3 | No data. | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Mixed grass-mixed forb herbaceous community |
| Community Phase Narrative: | | | |
| <p>No data. This phase is included because there is a theoretical chance for fire that removes a majority of the tree and shrub canopy. This community would likely be best characterized as a herbaceous community.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | No data. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FL



Rooting Depth (cm): Min RV Max
50 69.7 93

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 2.4 5

Texture: Slightly decomposed plant material, fine sandy loam, silt loam, gravelly silt loam

AWC (cm/cm): Min RV Max
0.17 0.31 0.35

pH: Min RV Max
4.7 6.2 7.2

Subsurface Layer

Thickness (cm): Min RV Max
50 67.3 88

Texture: Gravelly silt loam, extremely cobbly sandy loam, very gravelly sandy loam

AWC (cm/cm): Min RV Max
0.03 0.14 0.35

pH: Min RV Max
5.2 6.6 7.6

Influencing Water FeaturesNWI Code: R3UB1, R3UB2NWI Description: Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel; Riverine, Upper Perennial, Unconsolidated Bottom, SandRosgen Classification: Steep, entrenched, cascading step-pools; moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced poolsStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-5 | 15-30 | 15-55 | 2-15 | 2-35 | 2-35 | 10-20 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.01-1 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-1 | --- | --- |
| FM (4-24 inches) | --- | 0.01-5 | --- | --- |
| SD (<8 inches) | --- | --- | 3-7 | --- |
| SL (8-36 inches) | --- | --- | 1-7 | --- |
| SM (3-10 feet) | --- | --- | 40-40 | --- |
| TR (<15 feet) | --- | --- | --- | 0.01-0.01 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 1-23-45 | 33 | 27.7 |
| CARO7 | <i>Carex rotundata</i> | 10-10-10 | 17 | 12.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 7-14.2-25 | 67 | 30.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| WIPH | <i>Wilhelmsia physodes</i> | 1-4.3-7 | 50 | 14.7 |
| EQSC | <i>Equisetum scirpoides</i> | 2-4-5 | 50 | 14.1 |
| RALA | <i>Ranunculus lapponicus</i> | 8-8-8 | 17 | 11.5 |
| CHAN9 | <i>Chamerion angustifolium</i> | 5-5-5 | 17 | 9.1 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQPA | <i>Equisetum palustre</i> | 5-13.3-20 | 50 | 25.8 |
| PAPA8 | <i>Parnassia palustris</i> | 1-6.5-15 | 67 | 20.8 |
| EQAR | <i>Equisetum arvense</i> | 5-12.5-20 | 33 | 20.4 |
| RALA | <i>Ranunculus lapponicus</i> | 15-15-15 | 17 | 15.8 |
| HEAL | <i>Hedysarum alpinum</i> | 10-10-10 | 17 | 12.9 |
| CHLA13 | <i>Chamerion latifolium</i> | 0-4-8 | 33 | 11.6 |
| EQVA | <i>Equisetum variegatum</i> | 7-7-7 | 17 | 10.8 |
| MEPA | <i>Mertensia paniculata</i> | 5-5-5 | 17 | 9.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 7-7-7 | 17 | 10.8 |
| RUCH | <i>Rubus chamaemorus</i> | 5-5-5 | 17 | 9.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 7-9-10 | 50 | 21.2 |
| RIHU | <i>Ribes hudsonianum</i> | 15-15-15 | 17 | 15.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 15-15-15 | 17 | 15.8 |
| SAGL | <i>Salix glauca</i> | 10-10-10 | 17 | 12.9 |
| LEGR | <i>Ledum groenlandicum</i> | 1-2.3-3 | 50 | 10.8 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 0-2.5-5 | 33 | 9.1 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 0-2.5-5 | 33 | 9.1 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-5-5 | 17 | 9.1 |
| SAPS | <i>Salix pseudomonticola</i> | 5-5-5 | 17 | 9.1 |
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 17 | 9.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 5-22.5-40 | 33 | 27.4 |
| BEOC2 | <i>Betula occidentalis</i> | 1-5.5-10 | 33 | 13.5 |
| SARE2 | <i>Salix reticulata</i> | 10-10-10 | 17 | 12.9 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 10-10-10 | 17 | 12.9 |
| SAAR3 | <i>Salix arbusculoides</i> | 10-10-10 | 17 | 12.9 |
| SAPS | <i>Salix pseudomonticola</i> | 5-5-5 | 17 | 9.1 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 25-27.5-30 | 33 | 30.3 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 50-50-50 | 17 | 28.9 |
| SABE2 | <i>Salix bebbiana</i> | 5-10-15 | 50 | 22.4 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 5-12.5-20 | 33 | 20.4 |
| SAAL | <i>Salix alaxensis</i> | 20-20-20 | 17 | 18.3 |
| SAALA | <i>Salix alaxensis var. alaxensis</i> | 20-20-20 | 17 | 18.3 |
| SAAR3 | <i>Salix arbusculoides</i> | 15-15-15 | 17 | 15.8 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 2-3.5-5 | 33 | 10.8 |
| PIGL | <i>Picea glauca</i> | 0-2.5-5 | 33 | 9.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-4.7-10 | 50 | 15.3 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Moose | Summer |
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—10-20.5-29

Community Phase HCPC



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
32 63.5 97

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 3.9 9

Texture: Highly organic silt loam, moderately decomposed plant material, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.22 0.33 0.35

pH: Min RV Max
5.1 6.5 8.1

Subsurface Layer

Thickness (cm): Min RV Max
32 59.6 88

Texture: Very bouldery highly decomposed organic matter, gravelly sandy loam, very gravelly coarse sandy loam, very gravelly loamy coarse sand, channers, silt loam

AWC (cm/cm): Min RV Max
0.03 0.14 0.39

pH: Min RV Max
5.7 6.5 7.5

Influencing Water Features

NWI Code: PSS1, R2RS2, R3UB1, R3UB2, R3UB3

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; Riverine, Lower Perennial, Rocky Shore, Rubble; Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel; Riverine, Upper Perennial, Unconsolidated Bottom, Sand; Riverine, Upper Perennial, Unconsolidated Bottom, Mud

Rosgen Classification: Steep, entrenched, cascading step-pools; moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools; low-gradient, meandering, riffle-pool stream with low W/D ratio and little deposition

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 0-5 | 10-95 | 1-80 | 1-20 | 0-85 | 0-35 | 0-20 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 20-5 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.1-2 | --- | --- |
| SD (<8 inches) | --- | --- | 10-30 | --- |
| SL (8-36 inches) | --- | --- | 40-40 | --- |
| SM (3-10 feet) | --- | --- | 10-45 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TT (>40 feet) | --- | --- | --- | 5-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 10-10-10 | 10 | 10.0 |

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 4-14.1-20 | 70 | 31.5 |
| CAPO | <i>Carex podocarpa</i> | 25-25-25 | 10 | 15.8 |
| CAAQ | <i>Carex aquatilis</i> | 20-20-20 | 10 | 14.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 0-10-20 | 20 | 14.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| WIPH | <i>Wilhelmsia physodes</i> | 1-5.5-10 | 20 | 10.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| EQPA | <i>Equisetum palustre</i> | 25-27.5-30 | 20 | 23.5 |
| EQAR | <i>Equisetum arvense</i> | 1-12.8-20 | 40 | 22.6 |
| COPA28 | <i>Comarum palustre</i> | 15-15-15 | 10 | 12.2 |
| CHAN9 | <i>Chamerion angustifolium</i> | 1-5.5-10 | 20 | 10.5 |
| RALA | <i>Ranunculus lapponicus</i> | 10-10-10 | 10 | 10.0 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 10-10-10 | 10 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 3-16.5-30 | 20 | 18.2 |
| RUCH | <i>Rubus chamaemorus</i> | 5-7.5-10 | 20 | 12.2 |
| ARRU | <i>Arctostaphylos rubra</i> | 10-10-10 | 10 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 1-10-40 | 70 | 26.5 |
| ROAC | <i>Rosa acicularis</i> | 0-3.8-7 | 40 | 12.3 |
| SAPU15 | <i>Salix pulchra</i> | 5-5-5 | 20 | 10.0 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 2-3-5 | 30 | 9.5 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 10-33-75 | 50 | 40.6 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 1-14-35 | 40 | 23.7 |
| SARI4 | <i>Salix richardsonii</i> | 45-45-45 | 10 | 21.2 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 1-12-20 | 30 | 19.0 |
| SABE2 | <i>Salix bebbiana</i> | 1-12-30 | 30 | 19.0 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 20-20-20 | 10 | 14.1 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 20-20-20 | 10 | 14.1 |
| SAGL | <i>Salix glauca</i> | 5-6.7-10 | 30 | 14.1 |
| BEOC2 | <i>Betula occidentalis</i> | 15-15-15 | 10 | 12.2 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-16-33 | 30 | 21.9 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 30-30-30 | 10 | 17.3 |
| SAIN3 | <i>Salix interior</i> | 10-10-10 | 20 | 14.1 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 20-20-20 | 10 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 0.1-2.9-5 | 70 | 14.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 3-4.3-5 | 30 | 11.4 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-9.2-15 | 50 | 21.4 |
| BENE4 | <i>Betula neoalaskana</i> | 1-5.5-10 | 20 | 10.5 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|---------------------------|
| <i>Picea glauca</i> | 33-92-182 | 1.4-6-16.4 | 5-31-79 | 17 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 30-40-60 | 3 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Severe use | Willows | Moose | Summer |
| Slight use | | | Spring |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Summer |

Notable Plants: None observed

Species Richness: Number of stops—10; plant species per stop (min-avg-max)—9-17.8-25

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca*

Ecological Classification ID: F231XY196AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: High flood plains, swales of terraces and flood plains, middle flood plains

Slope (percent): Min Max
0 20

Elevation (feet): Min Max
640 860

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max
0 141

Flooding: Frequency Duration
Rare Brief

Ponding: None

Runoff: Low

Frost-Free Days: Min Max
75 110

Mean Annual Precipitation (inches): Low High
9 16

Mean Annual Air Temperature (°F): Low High
23 27

Monthly Data:

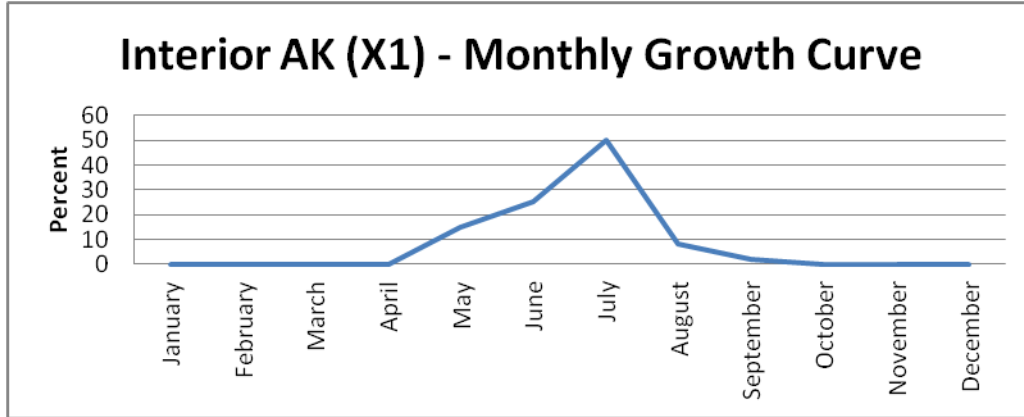
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31YV1—D31-Boreal taiga loamy high flood plains, frozen

D31YV2—D31-Boreal taiga loamy high flood plains, frozen

D31YV9—D31-Boreal taiga loamy high flood plains, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Fluventic Haplorthels

Dominant Parent Material: Organic material over loamy alluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
15 38 65

pH: Low RV High
3.5 7.5 8.1

Effective CEC (me/100g): Low High
12.3 29

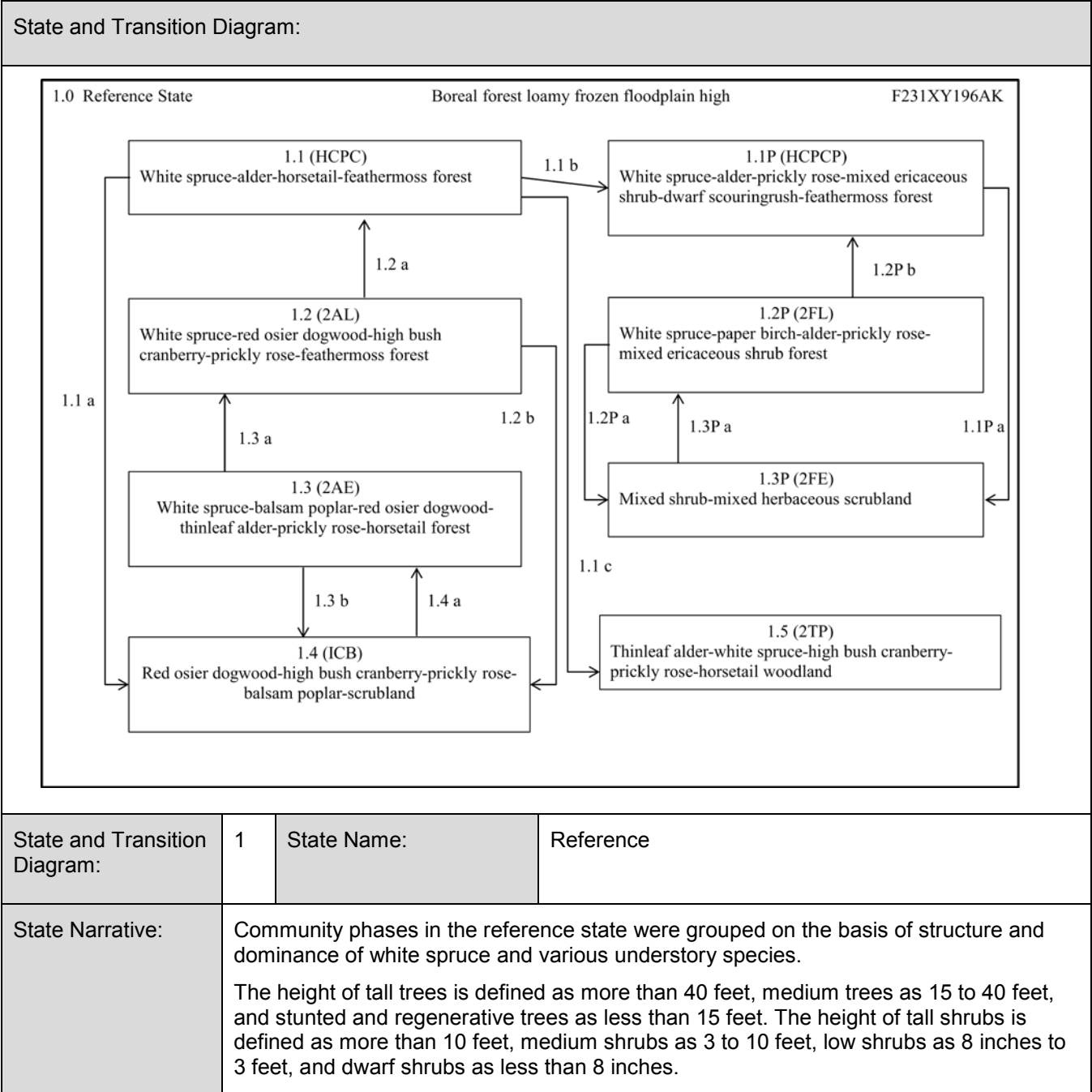
CEC (me/100g): Min RV Max
3.1 31.8 88.2


Organic Matter (percent): Low RV High
2 28 80

Bulk Density (1/3-Bar): Min RV Max
1.13 1.2 1.28


Plant Community Phases

| | |
|---|-------------|
| Ecological Site Description ID: | F231XY196AK |
| Ecological Dynamics of the Site: | |
| <p>This boreal ecological site is in areas adjacent to the Yukon River that occasionally to very rarely flood. The decreased intensity and frequency of flooding favors the replacement of deciduous trees with coniferous trees and represents a successional progression from site F231XY189AK (starting with community phase 1.3). As the site progresses from community phase 1.3 to 1.1, the surface organic matter content increases and permafrost develops and rises in the soil profile. The soils in community phase 1.1 are classified as Haplorthels and are composed of organic matter over sand and loamy alluvium.</p> <p>The interactions between ice bulldozing, the development of permafrost, and the flood regime lead to several unique plant community phases for this ecological site.</p> <p>As a river breaks up in spring, pack ice often breaches the riverbanks and causes a disturbance referred to as ice bulldozing. This ice-related disturbance completely shears off the white spruce forest canopy. Unlike on flood plain ecological sites that consist dominantly of deciduous trees and shrubs (e.g., F231XY189AK and F231XY198AK), white spruce does not regenerate quickly after ice damning/bulldozing events (perhaps >100 years). As a result, ice bulldozing results in a unique community phase (phase 1.4).</p> <p>As permafrost forms and rises in the soil profile, flood events may result in water being perched for extended periods on the permafrost. White spruce can survive flood events, but anaerobic conditions associated with ponding can stress and kill mature white spruce stands. It is presumed that a large number of standing dead or windthrown spruce trees is indicative of long-duration ponding events (community phase 1.5).</p> <p>As flooding becomes very rare, this ecological site begins to shift toward that of a flood plain terrace site (e.g., F231XY169AK). Indicators for this shift are presumed to be cryoturbate material in the soil profile, a decrease in the size and density of white spruce, an increase in the abundance and density of ericaceous vegetation and black spruce, and an increase in the likelihood of fire disturbance. The sites are described as post climax for this ecological site (community phases 1.1P, 1.2P, and 1.3P).</p> | |




| | | | |
|---|--|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-alder-horsetail-feathermoss forest |
| Community Phase Narrative: | | | |
| <p>As compared to community phase 1.2, phase 1.1 has taller and older white spruce trees. The tree cover is primarily in the tall tree stratum and is primarily pure stands of <i>Picea glauca</i> (total mature tree cover ~50%; trees average 140 years of age). The shrub cover is evenly distributed among the tall, medium, and low shrub strata (~60% cover). Common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Viburnum edule</i>, <i>Rosa acicularis</i>, <i>Shepherdia canadensis</i>, <i>Linnaea borealis</i>, and <i>Arctostaphylos rubra</i>. Forbs and graminoids form a dense understory (~80% cover). Common species include <i>Equisetum arvense</i>, <i>Galium boreale</i>, <i>Goodyera repens</i>, <i>Bromus inermis</i> ssp. <i>pumpeianus</i>, and <i>Elymus macrourus</i>. Moss forms a dense ground mat (~80% cover), and the most common species are <i>Hylocomium splendens</i> and <i>Rhytidiadelphus triquetrus</i>. Seven observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Intense flooding and/or ice shearing can remove a majority of the tree canopy. Species such as balsam poplar, alder, willow, and red osier dogwood quickly reestablish, resulting in a community that resembles that of community phase 1.4. | | |
| 1.1b | Normal time and growth without flooding. White spruce forest declines in productivity, which is believed to coincide with the depth to permafrost. The abundance and density of ericaceous plants increase. | | |


| | |
|------|---|
| 1.1c | A majority of the white spruce forest is killed, probably as a result of prolonged ponding after a flood event. |
|------|---|

| | | | |
|---|---|-----------------------|--|
| Phase 1.1p |  | | |
| Community Phase Number: | 1.1p | Community Phase Name: | White spruce-alder-prickly rose-mixed ericaceous shrub-dwarf scouringrush-feathermoss forest |
| Community Phase Narrative: | | | |
| <p>As compared to community phase 1.1, community phase 1.1p has a less dense white spruce canopy and reduced basal area. In addition, community phase 1.1p has a higher density of ericaceous plants. The tree canopy is primarily composed of <i>Picea glauca</i> with a small number of <i>Picea mariana</i>. The tree cover is distributed between the tall and medium strata (~30% cover), and the average basal area is 65 (average basal area of community phase 1.1 is 128). The shrub cover is evenly distributed among the tall, medium, and low shrub strata (~90% total shrub cover). Common species include <i>Alnus</i> sp., <i>Rosa acicularis</i>, <i>Linnaea borealis</i>, and <i>Arctostaphylos rubra</i>. Common ericaceous species include <i>Ledum groenlandicum</i>, <i>Vaccinium uliginosum</i>, and <i>Chamaedaphne calyculata</i>. Forbs are abundant (~50% cover) and diverse. The most common forbs are <i>Equisetum scirpoides</i>, <i>Boschniakia rossica</i>, and <i>Mertensia paniculata</i>. Moss forms a dense mat (~80% cover), and the most common species are <i>Hylocomium splendens</i> and <i>Rhytidiadelphus triquetrus</i>. Five observations of this phase were conducted.</p> | | | |


| Community Pathways | |
|--------------------|-----------------------------|
| Pathway Number: | Pathway Name & Description: |
| 1.1Pa | Fire. |

| | | | |
|---|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | White spruce-red osier dogwood-high bush cranberry-prickly rose-feathermoss forest |
| Community Phase Narrative: | | | |
| <p>As compared to phase 1.3, <i>Picea glauca</i> is the dominant species in the tree canopy and <i>Populus balsamifera</i> is a minor component. <i>Populus balsamifera</i> commonly occurs as standing dead trees or is a component of litter on the forest floor. The tree cover is primarily in the medium and tall tree strata (total mature tree cover ~60%; <i>Picea glauca</i> averages 77 years of age). Common understory species include <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Rosa acicularis</i>, <i>Galium boreale</i>, <i>Mertensia paniculata</i>, <i>Hylocomium splendens</i>, and <i>Rhytidiadelphus triquetrus</i>. One observation of this phase was conducted, and the site had been recently disturbed.</p> | | | |


| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Normal time and growth without flooding disturbance that removes the white spruce canopy. White spruce matures and completely replaces balsam poplar. |
| 1.2b | Intense flooding and/or ice shearing can remove a majority of the tree canopy. Species such as balsam poplar, alder, willow, and red osier dogwood quickly reestablish, resulting in a community that resembles that of community phase 1.4. |

| | | | |
|---|---|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | White spruce-balsam poplar-red osier dogwood-thinleaf alder-prickly rose-horsetail forest |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i> and <i>Populus balsamifera</i> are dominant in community phase 1.3. The tree cover primarily is in the medium tree stratum (total mature tree cover ~30%). Shrubs primarily are in the tall and low strata (~90% cover). Common species include <i>Salix alaxensis</i>, <i>Alnus incana</i> ssp. <i>tenuifolia</i>, <i>Cornus sericea</i>, and <i>Rosa acicularis</i>. Forbs are also abundant (~40% cover), and common species are <i>Equisetum arvense</i>, <i>Galium boreale</i>, and <i>Mertensia paniculata</i>. One observation of this phase was conducted.</p> | | | |


| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.3a | Normal time and growth. White spruce matures and outcompetes balsam poplar, which begins to be replaced in the forest canopy. |
| 1.3b | Intense flooding and/or ice shearing can remove a majority of the tree canopy. Species such as balsam poplar, alder, willow, and red osier dogwood quickly reestablish, resulting in a community that resembles that of community phase 1.4. |

| | | | |
|---|---|-----------------------|--|
| Phase 1.4 |  | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Red osier dogwood-high bush cranberry-prickly rose-balsam poplar-scrubland |
| Community Phase Narrative: | | | |
| <p>Phase 1.4 is in areas where large blocks of ice shear off the tree canopy, leaving an exposed forest understory. When roots remain intact, balsam poplar and several shrub species appear to quickly regenerate after ice bulldozing disturbances. The only tree species observed in these disturbed areas is <i>Populus balsamifera</i>, which are in the regeneration tree stratum (~10% cover). Shrubs primarily are in the low shrub stratum (total shrub cover ~60%). Common species include <i>Viburnum edule</i>, <i>Cornus sericea</i>, and <i>Rosa acicularis</i>. Forbs are abundant (~50% cover). Common species include <i>Equisetum arvense</i>, <i>Galium boreale</i>, <i>Mertensia paniculata</i>, and <i>Hedysarum alpinum</i>. Three observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|---|
| Pathway Number: | Pathway Name & Description: |
| 1.4a | Normal time and growth with flooding or ice shearing. It is believed that a white spruce and balsam poplar forest will reestablish on the disturbed site; however, no observations on the progression of the site after ice shearing were made. |

| | | | |
|---|---|-----------------------|---|
| Phase 1.5 |  | | |
| Community Phase Number: | 1.5 | Community Phase Name: | Thinleaf alder-white spruce-high bush cranberry-prickly rose-horsetail woodland |
| Community Phase Narrative: | | | |
| <p>Phase 1.5 is related to the die-off of the white spruce forest and the opening of the forest understory to increased light. This phase is distinctive due to an increased density of tall shrubs and large quantities of windthrown or standing dead spruce trees. <i>Picea glauca</i> is the dominant tree species, and it is primarily in the tall tree stratum (total mature tree cover ~15%; trees average 166 years of age). The shrub cover is primarily in the tall stratum, and <i>Alnus sp.</i> forms a dense canopy (~80% cover). Other common species include <i>Rosa acicularis</i>, <i>Viburnum edule</i>, <i>Linnaea borealis</i>, and <i>Equisetum sp.</i> Two observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|---|
| Pathway Number: | Pathway Name & Description: |
| 1.5a | The progression of this site after white spruce die-off was not observed. |

| | | | |
|--|---|-----------------------|---|
| Phase 1.2p |  | | |
| Community Phase Number: | 1.2p | Community Phase Name: | White spruce-paper birch-alder-prickly rose-mixed ericaceous shrub forest |
| Community Phase Narrative: | | | |
| <p>As compared to community phase 1.1p, phase 1.2p has younger <i>Picea glauca</i> trees and they are codominant with <i>Betula neoalaskana</i>. The tree cover is distributed between the tall and medium tree strata (~30% cover), and <i>Picea glauca</i> averages 76 years of age (white spruce averages 156 years of age in community phase 1.1p). Shrubs are the dominant vegetation (~100% cover), and the most common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Vaccinium uliginosum</i>, <i>Ledum groenlandicum</i>, <i>Rosa acicularis</i>, and <i>Chamaedaphne calyculata</i>. Graminoids and forbs are abundant (~75% combined cover). Common species include <i>Calamagrostis canadensis</i>, <i>Equisetum scirpoides</i>, <i>Boschniakia rossica</i>, and <i>Mertensia paniculata</i>. Two observations of this phase were conducted.</p> | | | |

| Community Pathways | | | |
|--|--|-----------------------|--|
| Pathway Number: | Pathway Name & Description: | | |
| 1.2Pa | Fire. | | |
| 1.2Pb | Normal time and growth without fire. Paper birch dies off and is replaced by white spruce. | | |
| Community Phase Number: | 1.3p | Community Phase Name: | Mixed shrub-mixed herbaceous scrubland |
| Community Phase Narrative: | | | |
| No observations of this phase were conducted. This community is conceptual and is considered an early-fire sere associated with a post-climax high flood plain forest. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3Pa | Normal time and growth without fire. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2AE

Rooting Depth (cm): Min RV Max
 63 63 63

Restrictive Features: None recorded

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 3 3 3

Texture: Stratified peat, silt loam, and peat

AWC (cm/cm): Min RV Max
 0.25 0.3 0.35

pH: Min RV Max
 7.4 7.4 7.4

Subsurface Layer

Thickness (cm): Min RV Max
 60 60 60

Texture: Silt loam

AWC (cm/cm): Min RV Max
 0.06 0.16 0.25

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pH: Min RV Max
7.3 7.7 8

Influencing Water Features

NWI Code: R2UB2

NWI Description: Riverine, Lower Perennial, Unconsolidated Bottom, Sand

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point bars

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-1 | 1-1 | 90-90 | 10-10 | 2-2 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 1-1 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-0.1 | --- |
| SL (8-36 inches) | --- | --- | 1-15 | --- |
| ST (>10 feet) | --- | --- | 10-5 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-2 |
| TM (15-40 feet) | --- | --- | --- | 20-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| BROMU | <i>Bromus</i> | 1-1-1 | 100 | 10.0 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-1-1 | 100 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQPA | <i>Equisetum palustre</i> | 20-20-20 | 100 | 44.7 |
| MEPA | <i>Mertensia paniculata</i> | 10-10-10 | 100 | 31.6 |
| GABO2 | <i>Galium boreale</i> | 5-5-5 | 100 | 22.4 |
| EUSI13 | <i>Eurybia sibirica</i> | 1-1-1 | 100 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 15-15-15 | 100 | 38.7 |
| COSES | <i>Cornus sericea ssp. sericea</i> | 15-15-15 | 100 | 38.7 |
| VIED | <i>Viburnum edule</i> | 1-1-1 | 100 | 10.0 |

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Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| SAAR3 | <i>Salix arbusculoides</i> | 25-25-25 | 100 | 50.0 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-10-10 | 100 | 31.6 |
| SAALA | <i>Salix alaxensis var. alaxensis</i> | 10-10-10 | 100 | 31.6 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 10-10-10 | 100 | 31.6 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 5-5-5 | 100 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 2-2-2 | 100 | 14.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 20-20-20 | 100 | 44.7 |
| PIGL | <i>Picea glauca</i> | 5-5-5 | 100 | 22.4 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 21-22-23 | 3-3-3.2 | 25-25-25 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 48-48-48 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Other woody plants | Other | Winter |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—26-26-26

Community Phase 2AL



Rooting Depth (cm): Min RV Max
 89 89 89

Restrictive Features: None recorded

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 4 4 4

Texture: Stratified slightly decomposed plant material and silt loam

AWC (cm/cm): Min RV Max
 0.25 0.3 0.35

pH: Min RV Max
 5.7 5.7 5.7

Subsurface Layer

Thickness (cm): Min RV Max
 85 85 85

Texture: Silt loam, coarse sandy loam, sandy loam

AWC (cm/cm): Min RV Max
 0.14 0.16 0.25

pH: Min RV Max
 7.3 7.7 8

Influencing Water FeaturesNWI Code: R2UB2NWI Description: Riverine, Lower Perennial, Unconsolidated Bottom, SandRosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point barsStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-3 | 55-55 | 35-35 | 15-15 | 2-2 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-2 | --- | --- | --- |
| FD (<4 inches) | --- | 1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-2 | --- | --- |
| FT (>24 inches) | --- | 0.1-0.1 | --- | --- |
| SD (<8 inches) | --- | --- | 1-1 | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-0.1 |
| TM (15-40 feet) | --- | --- | --- | 25-25 |
| TT (>40 feet) | --- | --- | --- | 30-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 2-2-2 | 100 | 14.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| GABO2 | <i>Galium boreale</i> | 1-1-1 | 100 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 2-2-2 | 100 | 14.1 |
| HEAL | <i>Hedysarum alpinum</i> | 1-1-1 | 100 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| LIBO3 | <i>Linnaea borealis</i> | 1-1-1 | 100 | 10.0 |

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Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 100 | 22.4 |
| VIDE | <i>Viburnum edule</i> | 2-2-2 | 100 | 14.1 |
| COSES | <i>Cornus sericea</i> ssp. <i>sericea</i> | 1-1-1 | 100 | 10.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 25-25-25 | 100 | 50.0 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 30-30-30 | 100 | 54.8 |
| POBA2 | <i>Populus balsamifera</i> | 5-5-5 | 100 | 22.4 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Picea glauca</i> | 74-78-81 | 9.3-10-10.5 | 64-70-73 | 3 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 160-160-160 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—23-23-23

Community Phase ICB



Rooting Depth (cm): Min RV Max
62 78.7 90

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 1.7 3

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.15 0.28 0.35

pH: Min RV Max
6.2 7.2 7.7

Subsurface Layer

Thickness (cm): Min RV Max
62 77 87

Texture: Highly decomposed plant material, very fine sandy loam

AWC (cm/cm): Min RV Max
0.13 0.23 0.4

pH: Min RV Max
6.1 6.9 7.9

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point bars

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 10-40 | 15-50 | 10-30 | 5-80 | 0-2 | 0-0 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 3-7 | --- | --- | --- |
| FD (<4 inches) | --- | 2-2 | --- | --- |
| FM (4-24 inches) | --- | 0.1-7 | --- | --- |
| FT (>24 inches) | --- | 10-15 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-0.01 | --- |
| SL (8-36 inches) | --- | --- | 1-20 | --- |
| TR (<15 feet) | --- | --- | --- | 15-15 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 1-3.7-7 | 100 | 19.1 |
| ELMA7 | <i>Elymus macrourus</i> | 3-5-7 | 67 | 18.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 0-1.7-3 | 100 | 12.9 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 15-23.3-40 | 100 | 48.3 |
| MEPA | <i>Mertensia paniculata</i> | 2-11-20 | 67 | 27.1 |
| HEAL | <i>Hedysarum alpinum</i> | 5-7.5-10 | 67 | 22.4 |
| GABO2 | <i>Galium boreale</i> | 2-4-7 | 100 | 20.0 |
| GEPR3 | <i>Gentiana prostrata</i> | 0-2.5-5 | 67 | 12.9 |
| DEGL3 | <i>Delphinium glaucum</i> | 4-4-4 | 33 | 11.5 |
| ARTI | <i>Artemisia tilesii</i> | 3-3-3 | 33 | 10.0 |
| SOMU | <i>Solidago multiradiata</i> | 3-3-3 | 33 | 10.0 |

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Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 15-15-15 | 33 | 22.4 |
| ARTI | <i>Artemisia tilesii</i> | 10-10-10 | 33 | 18.3 |
| ACMI2 | <i>Achillea millefolium</i> | 3-3-3 | 33 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| LIBO3 | <i>Linnaea borealis</i> | 0-4.3-10 | 100 | 20.8 |
| ARRU | <i>Arctostaphylos rubra</i> | 5-5-5 | 33 | 12.9 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| ROAC | <i>Rosa acicularis</i> | 0-15-25 | 100 | 38.7 |
| SAAL | <i>Salix alaxensis</i> | 30-30-30 | 33 | 31.6 |
| VIDE | <i>Viburnum edule</i> | 1-7-10 | 100 | 26.5 |
| RUID | <i>Rubus idaeus</i> | 20-20-20 | 33 | 25.8 |
| COSES | <i>Cornus sericea ssp. sericea</i> | 8-9-10 | 67 | 24.5 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 5-5-5 | 33 | 12.9 |
| SAGL | <i>Salix glauca</i> | 5-5-5 | 33 | 12.9 |
| SHCA | <i>Shepherdia canadensis</i> | 1-1.5-2 | 67 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 3-11-15 | 100 | 33.2 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Willows | Moose | Spring |
| Unknown | | | Unknown |

Notable Plant: *Symphyotrichum falcatum* var. *falcatum*

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—18-22.3-26

Community Phase 2FL

Rooting Depth (cm): Min RV Max
33 44.5 56

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

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Surface Layer

Thickness (cm): Min RV Max
33 37.5 42

Texture: Peat, stratified mucky peat and muck

AWC (cm/cm): Min RV Max
0.35 0.37 0.4

pH: Min RV Max
4 4.8 5.5

Subsurface Layer

Thickness (cm): Min RV Max
0 7 14

Texture: Permanently frozen silt loam

AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
6.7 6.7 6.7

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-5 | 30-30 | 15-40 | 5-10 | 0-2 | 0-0 | 2-3 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 5-60 | --- | --- | --- |
| FD (<4 inches) | --- | 2-7 | --- | --- |
| FM (4-24 inches) | --- | 3-8 | --- | --- |
| FT (>24 inches) | --- | 2-3 | --- | --- |
| SD (<8 inches) | --- | --- | 40-5 | --- |
| SL (8-36 inches) | --- | --- | 12-7 | --- |
| SM (3-10 feet) | --- | --- | 10-10 | --- |
| ST (>10 feet) | --- | --- | 8-8 | --- |
| TR (<15 feet) | --- | --- | --- | 10-5 |
| TM (15-40 feet) | --- | --- | --- | 6-8 |
| TT (>40 feet) | --- | --- | --- | 10-18 |

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Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 20-20-20 | 50 | 31.6 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 10-35-60 | 100 | 59.2 |
| CAREX | <i>Carex</i> | 5-5-5 | 50 | 15.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| PYAS | <i>Pyrola asarifolia</i> | 7-7-7 | 50 | 18.7 |
| GELI2 | <i>Geocaulon lividum</i> | 7-7-7 | 50 | 18.7 |
| ADMO | <i>Adoxa moschatellina</i> | 4-4-4 | 50 | 14.1 |
| ORSE | <i>Orthilia secunda</i> | 3-3-3 | 50 | 12.2 |
| EQSC | <i>Equisetum scirpoides</i> | 3-3-3 | 50 | 12.2 |
| PYMI | <i>Pyrola minor</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQPR | <i>Equisetum pratense</i> | 8-8-8 | 50 | 20.0 |
| BORO | <i>Boschniakia rossica</i> | 3-4-5 | 100 | 20.0 |
| EQSC | <i>Equisetum scirpoides</i> | 5-5-5 | 50 | 15.8 |
| GABO2 | <i>Galium boreale</i> | 3-3-3 | 50 | 12.2 |
| GORE2 | <i>Goodyera repens</i> | 3-3-3 | 50 | 12.2 |
| PYGR | <i>Pyrola grandiflora</i> | 3-3-3 | 50 | 12.2 |
| COPA28 | <i>Comarum palustre</i> | 2-2-2 | 50 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 2-2.5-3 | 100 | 15.8 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 3-3-3 | 50 | 12.2 |
| POAL11 | <i>Polygonum alpinum</i> | 2-2-2 | 50 | 10.0 |
| CHAN9 | <i>Chamerion angustifolium</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 40-40-40 | 50 | 44.7 |
| RUAR | <i>Rubus arcticus</i> | 9-9-9 | 50 | 21.2 |
| RUCH | <i>Rubus chamaemorus</i> | 5-5-5 | 50 | 15.8 |
| LIBO3 | <i>Linnaea borealis</i> | 5-5-5 | 50 | 15.8 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 5-8.5-12 | 100 | 29.2 |
| LEGR | <i>Ledum groenlandicum</i> | 7-7-7 | 100 | 26.5 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 4-5.5-7 | 100 | 23.5 |
| RITR | <i>Ribes triste</i> | 3-3-3 | 50 | 12.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| SABE2 | <i>Salix bebbiana</i> | 25-25-25 | 50 | 35.4 |
| ROAC | <i>Rosa acicularis</i> | 4-7-10 | 100 | 26.5 |
| BETUL | <i>Betula</i> | 4-4-4 | 50 | 14.1 |
| BEGL | <i>Betula glandulosa</i> | 3-3-3 | 50 | 12.2 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 8-53-98 | 100 | 72.8 |
| SAIN3 | <i>Salix interior</i> | 15-15-15 | 50 | 27.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 10-10-10 | 50 | 22.4 |
| PIMA | <i>Picea mariana</i> | 5-5-5 | 50 | 15.8 |
| BENE4 | <i>Betula neoalaskana</i> | 3-3-3 | 50 | 12.2 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-5-5 | 50 | 15.8 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 8-8-8 | 100 | 28.3 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5.5-6 | 100 | 23.5 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 18-18-18 | 50 | 30.0 |
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 50 | 22.4 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 41-76-129 | 3.3-7-11.8 | 32-45-67 | 5 | B |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 19-19-19 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—28-32.5-37

Community Phase 2TP

| <u>Rooting Depth (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|----------------------------|------------|-----------|------------|
| | 5 | 20 | 35 |

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

| <u>Thickness (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------------------|------------|-----------|------------|
| | 5 | 17.5 | 30 |

Texture: Slightly decomposed plant material, stratified mucky peat and very fine sandy loam

| <u>AWC (cm/cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|---------------------|------------|-----------|------------|
| | 0.25 | 0.32 | 0.35 |

| <u>pH:</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------|------------|-----------|------------|
| | 7.8 | 7.8 | 7.8 |

Subsurface Layer

| <u>Thickness (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------------------|------------|-----------|------------|
| | 0 | 2.5 | 5 |

Texture: Permanently frozen sandy loam

| <u>AWC (cm/cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|---------------------|------------|-----------|------------|
| | 0.15 | 0.15 | 0.15 |

| <u>pH:</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------|------------|-----------|------------|
| | 8.4 | 8.4 | 8.4 |

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 4-4 | 20-40 | 25-30 | 15-15 | 0-5 | 0-0 | 0-5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 3-4 | --- | --- |
| FM (4-24 inches) | --- | 2-80 | --- | --- |
| FT (>24 inches) | --- | 15-6 | --- | --- |
| SD (<8 inches) | --- | --- | 10-6 | --- |
| SL (8-36 inches) | --- | --- | 4-6 | --- |
| SM (3-10 feet) | --- | --- | 20-20 | --- |
| ST (>10 feet) | --- | --- | 95-95 | --- |
| TT (>40 feet) | --- | --- | --- | 15-15 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 5-5-5 | 50 | 15.8 |
| MOUN2 | <i>Moneses uniflora</i> | 1-2-3 | 100 | 14.1 |
| GABO2 | <i>Galium boreale</i> | 4-4-4 | 50 | 14.1 |
| PYROL | <i>Pyrola</i> | 3-3-3 | 50 | 12.2 |
| LIBO4 | <i>Listera borealis</i> | 3-3-3 | 50 | 12.2 |
| GORE2 | <i>Goodyera repens</i> | 3-3-3 | 50 | 12.2 |
| SOMU | <i>Solidago multiradiata</i> | 2-2-2 | 50 | 10.0 |
| PYAS | <i>Pyrola asarifolia</i> | 2-2-2 | 50 | 10.0 |
| ARTI | <i>Artemisia tilesii</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| EQUIS | <i>Equisetum</i> | 80-80-80 | 50 | 63.2 |
| EQAR | <i>Equisetum arvense</i> | 50-50-50 | 50 | 50.0 |
| MEPA | <i>Mertensia paniculata</i> | 6-6-6 | 50 | 17.3 |
| CYPA5 | <i>Cypripedium passerinum</i> | 4-4-4 | 50 | 14.1 |
| BORO | <i>Boschniakia rossica</i> | 1-2-3 | 100 | 14.1 |
| THALI2 | <i>Thalictrum</i> | 2-2-2 | 50 | 10.0 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 2-2-2 | 50 | 10.0 |
| GABO2 | <i>Galium boreale</i> | 2-2-2 | 50 | 10.0 |
| PAPA8 | <i>Parnassia palustris</i> | 2-2-2 | 50 | 10.0 |
| PLHY2 | <i>Platanthera hyperborea</i> | 2-2-2 | 50 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| COSE5 | <i>Corydalis sempervirens</i> | 15-15-15 | 50 | 27.4 |
| MEPA | <i>Mertensia paniculata</i> | 6-6-6 | 50 | 17.3 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| LIBO3 | <i>Linnaea borealis</i> | 7-8.5-10 | 100 | 29.2 |
| RUAR | <i>Rubus arcticus</i> | 6-6-6 | 50 | 17.3 |
| EQSC | <i>Equisetum scirpoides</i> | 2-2-2 | 50 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 6-6-6 | 100 | 24.5 |
| VID | <i>Viburnum edule</i> | 7-7-7 | 50 | 18.7 |
| RIBES | <i>Ribes</i> | 4-4-4 | 50 | 14.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| VID | <i>Viburnum edule</i> | 20-20-20 | 50 | 31.6 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 75-85-95 | 100 | 92.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-5-5 | 50 | 15.8 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 15-27.5-40 | 100 | 52.4 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 137-166-189 | 11.2-15-18.3 | 68-88-110 | 6 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 9-64.5-120 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Other | Other | Unknown |
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—19-26-33

Community Phase HCPC



Rooting Depth (cm): Min RV Max
5 87.6 215

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 23.6 80

Texture: Peat, slightly decomposed plant material, water

AWC (cm/cm): Min RV Max
0.25 0.34 0.35

pH: Min RV Max
5.3 6.6 7.8

Subsurface Layer

Thickness (cm): Min RV Max
5 64 135

Texture: Permanently frozen silt loam, peaty silt loam, highly decomposed plant material, silt loam, mucky peat, fine sandy loam, peat, very fine sandy loam

AWC (cm/cm): Min RV Max
0.16 0.27 0.4

pH: Min RV Max
5.7 7.2 8.2

Influencing Water Features

NWl Code: PEM1

NWl Description: Palustrine, Emergent, Persistent

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point bars

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-5 | 0-90 | 5-80 | 0-10 | 0-3 | 0-0 | 0-100 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-9 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-5 | --- | --- |
| FM (4-24 inches) | --- | 10-5 | --- | --- |
| FT (>24 inches) | --- | 3-3 | --- | --- |
| SD (<8 inches) | --- | --- | 10-10 | --- |
| SL (8-36 inches) | --- | --- | 10-5 | --- |
| ST (>10 feet) | --- | --- | 2-60 | --- |
| TR (<15 feet) | --- | --- | --- | 3-3 |
| TM (15-40 feet) | --- | --- | --- | 5-5 |
| TT (>40 feet) | --- | --- | --- | 25-25 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| CATE5 | <i>Carex tenuiflora</i> | 70-70-70 | 8 | 24.2 |
| CAAQ | <i>Carex aquatilis</i> | 5-35-65 | 17 | 24.2 |
| CACO10 | <i>Carex concinna</i> | 9-12-15 | 17 | 14.1 |
| CAPO | <i>Carex podocarpa</i> | 15-15-15 | 8 | 11.2 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 80-80-80 | 8 | 25.8 |
| CAUT | <i>Carex utriculata</i> | 45-45-45 | 8 | 19.4 |
| ELMA7 | <i>Elymus macrourus</i> | 0.1-17.6-35 | 17 | 17.1 |
| BRCI2 | <i>Bromus ciliatus</i> | 35-35-35 | 8 | 17.1 |
| GLGR | <i>Glyceria grandis</i> | 25-25-25 | 8 | 14.4 |
| CAAQ | <i>Carex aquatilis</i> | 25-25-25 | 8 | 14.4 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-7.7-20 | 25 | 13.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 0.1-4.7-10 | 25 | 10.8 |
| COPA28 | <i>Comarum palustre</i> | 3-6.5-10 | 17 | 10.4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 3-30.8-85 | 33 | 32.0 |
| EQPR | <i>Equisetum pratense</i> | 35-37.5-40 | 17 | 25.0 |
| HEAL | <i>Hedysarum alpinum</i> | 2-12.5-40 | 33 | 20.4 |
| GABO2 | <i>Galium boreale</i> | 0.1-6.7-10 | 50 | 18.3 |
| METR3 | <i>Menyanthes trifoliata</i> | 35-35-35 | 8 | 17.1 |
| COPA28 | <i>Comarum palustre</i> | 3-7.7-15 | 25 | 13.8 |
| EQSC | <i>Equisetum scirpoides</i> | 0.1-10.1-20 | 17 | 12.9 |
| MEPA | <i>Mertensia paniculata</i> | 1-4.8-10 | 33 | 12.6 |
| BORO | <i>Boschniakia rossica</i> | 0.1-2-3 | 50 | 10.1 |
| GELI2 | <i>Geocaulon lividum</i> | 1-5.5-10 | 17 | 9.6 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 60-60-60 | 8 | 22.4 |
| MEPA | <i>Mertensia paniculata</i> | 5-5-5 | 25 | 11.2 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 1-3.8-7 | 33 | 11.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| LIBO3 | <i>Linnaea borealis</i> | 2-6-10 | 67 | 20.0 |
| ARRU | <i>Arctostaphylos rubra</i> | 1-4.4-10 | 58 | 16.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 10-11.8-15 | 33 | 19.8 |
| VIDE | <i>Viburnum edule</i> | 5-7.5-10 | 17 | 11.2 |
| SHCA | <i>Shepherdia canadensis</i> | 1-3.2-5 | 33 | 10.4 |
| LEGR | <i>Ledum groenlandicum</i> | 2-4-5 | 25 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-27.5-45 | 17 | 21.4 |
| VIDE | <i>Viburnum edule</i> | 1-7.8-15 | 42 | 18.0 |
| ROAC | <i>Rosa acicularis</i> | 7-13-20 | 25 | 18.0 |
| COSES | <i>Cornus sericea ssp. sericea</i> | 1-5.5-10 | 17 | 9.6 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-37-60 | 42 | 39.3 |
| SABE2 | <i>Salix bebbiana</i> | 2-5-8 | 17 | 9.1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-7.1-15 | 58 | 20.4 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 25-42.1-60 | 58 | 49.6 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 93-141-290 | 7-10-12.3 | 53-64-82 | 20 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 75-128.5-160 | 7 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Other woody plants | Other | Summer |
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Moose | Unknown |
| Slight use | Other woody plants | Other | Unknown |
| Slight use | Other woody plants | Other | Winter |
| Slight use | Willows | Moose | Unknown |
| Slight use | Willows | Other | Winter |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—12; plant species per stop (min-avg-max)—7-22.2-44

Community Phase HCPCP



Rooting Depth (cm): Min RV Max
 0 55.2 97

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 0 12.4 21

Texture: Mucky peat, peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.25 0.32 0.35

pH: Min RV Max
 5.9 7.1 8.3

Subsurface Layer

Thickness (cm): Min RV Max
 0 42.8 76

Texture: Silt loam, mucky peat, fine sandy loam, very fine sandy loam

AWC (cm/cm): Min RV Max
 0.15 0.27 0.4

pH: Min RV Max
 6.9 7.5 8.1

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point barsStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-3 | 25-95 | 5-20 | 0-10 | 0-3 | 0-0 | 0-25 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.01-0.01 | --- | --- | --- |
| FD (<4 inches) | --- | 1-30 | --- | --- |
| FM (4-24 inches) | --- | 0.01-3 | --- | --- |
| SD (<8 inches) | --- | --- | 1-1 | --- |
| SL (8-36 inches) | --- | --- | 1-8 | --- |
| ST (>10 feet) | --- | --- | 35-35 | --- |
| TR (<15 feet) | --- | --- | --- | 0.01-0.01 |
| TM (15-40 feet) | --- | --- | --- | 3-35 |
| TT (>40 feet) | --- | --- | --- | 10-10 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| CATE5 | <i>Carex tenuiflora</i> | 40-40-40 | 17 | 25.8 |
| CAREX | <i>Carex</i> | 0-6.7-10 | 50 | 18.3 |
| CAST10 | <i>Carex stylosa</i> | 15-15-15 | 17 | 15.8 |
| ARLA2 | <i>Arctagrostis latifolia</i> | 5-6.5-8 | 33 | 14.7 |
| CALAM | <i>Calamagrostis</i> | 5-5-5 | 17 | 9.1 |
| CABI5 | <i>Carex bigelowii</i> | 5-5-5 | 17 | 9.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAAQ | <i>Carex aquatilis</i> | 85-85-85 | 17 | 37.6 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 2-15.6-40 | 83 | 36.1 |
| EQVA | <i>Equisetum variegatum</i> | 10-10-10 | 17 | 12.9 |
| ORSE | <i>Orthilia secunda</i> | 2-2.3-3 | 50 | 10.8 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------------|---------------------------------|------------------|----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 2-6.8-10 | 67 | 21.2 |
| GABO2 | <i>Galium boreale</i> | 3-6-10 | 50 | 17.3 |
| EQPR | <i>Equisetum pratense</i> | 15-15-15 | 17 | 15.8 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 0.1-2.6-5 | 83 | 14.8 |
| GELI2 | <i>Geocaulon lividum</i> | 0-3.4-10 | 50 | 13.0 |
| EQVA | <i>Equisetum variegatum</i> | 10-10-10 | 17 | 12.9 |
| BORO | <i>Boschniakia rossica</i> | 0-1.8-3 | 83 | 12.3 |
| EQAR | <i>Equisetum arvense</i> | 8-8-8 | 17 | 11.5 |
| SAAN3 | <i>Saussurea angustifolia</i> | 2-2.5-3 | 33 | 9.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| ARRU | <i>Arctostaphylos rubra</i> | 1-8.8-20 | 67 | 24.2 |
| LIBO3 | <i>Linnaea borealis</i> | 1-5-15 | 67 | 18.3 |
| ANPO | <i>Andromeda polifolia</i> | 6-6-6 | 17 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------|---------------------------------|------------------|----------------------------|
| ROAC | <i>Rosa acicularis</i> | 10-23.3-35 | 50 | 34.2 |
| MYGA | <i>Myrica gale</i> | 60-60-60 | 17 | 31.6 |
| LEGR | <i>Ledum groenlandicum</i> | 7-14-20 | 50 | 26.5 |
| SHCA | <i>Shepherdia canadensis</i> | 2-4.5-8 | 67 | 17.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 0.1-4.7-8 | 50 | 15.3 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 1-3.7-7 | 50 | 13.5 |
| SAPU15 | <i>Salix pulchra</i> | 8-8-8 | 17 | 11.5 |
| LEDUM | <i>Ledum</i> | 5-5-5 | 17 | 9.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 25-40-55 | 50 | 44.7 |
| ARRU | <i>Arctostaphylos rubra</i> | 25-25-25 | 17 | 20.4 |
| B EGL | <i>Betula glandulosa</i> | 10-10-10 | 17 | 12.9 |
| ROAC | <i>Rosa acicularis</i> | 7-7-7 | 17 | 10.8 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 50-50-50 | 17 | 28.9 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-22.5-35 | 33 | 27.4 |
| SALIX | <i>Salix</i> | 7-7-7 | 17 | 10.8 |
| SABE2 | <i>Salix bebbiana</i> | 5-5-5 | 17 | 9.1 |
| SAIN3 | <i>Salix interior</i> | 5-5-5 | 17 | 9.1 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 0-3.2-10 | 100 | 17.8 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-21.2-35 | 67 | 37.6 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-20-35 | 67 | 36.5 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 63-156-211 | 6.2-12-73.5 | 32-43-56 | 15 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 21-65.9-85 | 5 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | | | Unknown |
| Slight use | Other woody plants | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—16-28.7-41

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Populus balsamifera*

Ecological Classification ID: F231XY197AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Drainageways of terraces

Slope (percent): Min Max

1 15

Elevation (feet): Min Max

623 984

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

0 0

Flooding: Frequency Duration

Occasional Brief

Ponding: None

Runoff: Low

Frost-Free Days: Min Max

75 110

Mean Annual Precipitation (inches): Low High

9 16

Mean Annual Air Temperature (°F): Low High

23 27

Monthly Data:

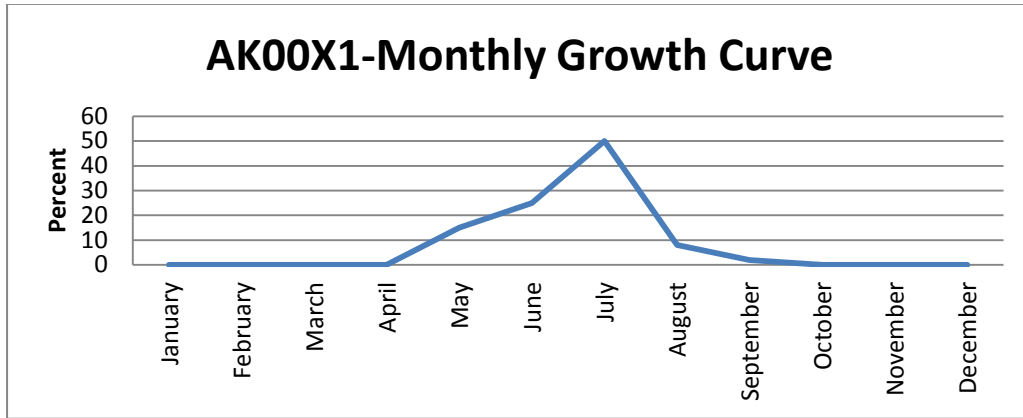
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31YV1—D31-Boreal forest loamy mid flood plains

D31YV8—D31-Boreal forest loamy mid flood plains

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, calcareous Typic Cryofluvents

Dominant Parent Material: Organic material over loamy alluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
15 38 65

pH: Low RV High
4 7.7 8.2

Effective CEC (me/100g): Low High
22.9 52.8

CEC (me/100g): Min RV Max
2.1 22.4 62


Organic Matter (percent): Low RV High
1 27.7 80

Bulk Density (1/3-Bar): Min RV Max
1.14 1.2 1.42


Plant Community Phases

| | | | |
|--|-------------|-------------|-----------|
| Ecological Site Description ID: | F231XY197AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is in lowland drainageways on flood plain terraces. These loamy soils have permafrost, are saturated, and generally are in less sloping areas (<10% slopes). The soils in community phase 1.1 are classified as Aquorthels and are composed of organic material over loamy alluvium. The climax phase community is characterized as a white spruce forest with dense shrub understory directly adjacent to flowing water. As the drainageways do not have unvegetated bars, flooding was not included as a disturbance regime.</p> <p>Fire is an observed disturbance regime that resulted in three phases. No alternate states were observed. Fire is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. For this ecological site, high-severity fire events are considered more typical than low-severity fire events. Low-severity and high-severity fire events appear to cause differences in the depth of the organic material on the soil surface, the presence and/or depth to permafrost, and the present and potential vegetation.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div>Boreal forest loamy frozen drainages</div><div>F231XY197AK</div><div><div><div>1.1 (HCPC) White spruce-alder-prickly rose-lingonberry-horsetail forest</div><div>1.2 (2FL) Paper birch-alder-willow-mixed low scrub-blue joint grass-moss-woodland</div><div>1.3 (2FE) Willow-prickly rose-blue joint grass-mixed forb scrubland</div></div><div><div>1.1 a</div><div>1.2 b</div><div>1.2 a</div><div>1.3 b</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |

| | |
|------------------|--|
| State Narrative: | <p>Phases in the reference state were grouped on the basis of structure and dominance of deciduous and coniferous trees and shrubs, which are believed to be directly related to the time since the last fire event and the severity of the burn.</p> <p>During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost often drops out of the soil profile, and the sites become drier. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow). With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.2.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|------------------|--|

| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White Spruce-Alder-Prickly Rose-Lingonberry-Horsetail Forest |

| Community Phase Narrative: | |
|--|---|
| <p>The majority of the tree cover is in the tall tree stratum (total mature tree cover ~40%). <i>Picea glauca</i> is the dominant tree species, but <i>Betula neoalaskana</i> and <i>Populus balsamifera</i> are also present. The majority of the shrub cover is in the tall and low shrub strata (total shrub cover ~60%). Common shrubs include <i>Alnus incana</i>, <i>Rosa acicularis</i>, and <i>Vaccinium vitis-idaea</i>. Forbs (~35% cover) are more abundant than graminoids (~15% cover). Common forbs and graminoids include <i>Equisetum arvense</i>, <i>Geocaulon lividum</i>, and <i>Arctagrostis latifolia</i>. Lichen are not present, and the moss cover is minimal (~15%). One observation of this phase was conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Fire. White spruce is the dominant tree species. For this ecological site, this phase has the longest fire return interval. |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Paper Birch-Alder-Willow-Mixed Low Scrub-Blue Joint Grass-Moss-Woodland |

| Community Phase Narrative: | |
|--|---|
| <p>The majority of the tree cover is in the medium tree stratum (total mature tree cover ~15%). <i>Betula neoalaskana</i> is the dominant tree species, but <i>Picea mariana</i> is also present. The majority of the shrub cover is in the tall and low shrub strata (total shrub cover ~60%). Common shrubs include <i>Alnus incana</i>, <i>Salix sp.</i>, and <i>Rosa acicularis</i>. Graminoids are abundant (~45% cover), and the most common species is <i>Calamagrostis canadensis</i>. Forbs and lichen are minor vegetative components. Moss is common (~45% cover). Three observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. Paper birch is the dominant tree species. |
| 1.2b | Normal time and growth without fire. Paper birch will eventually be replaced by white spruce, resulting in a community resembling that of community phase 1.1. The fire return interval is presumed to be shorter than that of community phase 1.1 but longer than that of community phase 1.3. |

| | | | |
|-------------------------|---|-----------------------|--|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Willow-Blue Joint Grass-Mixed Forb Scrubland |

| Community Phase Narrative: | |
|--|--|
| <p>Charred and dead trees are common. The tree cover is minimal (~2% cover), and the only tree species observed is <i>Betula neoalaskana</i>. The majority of the shrub cover is in the medium and low strata (total shrub cover 20%). The most common shrubs are <i>Salix</i> sp. Graminoids (~45% cover) and forbs are abundant (~20% cover). The most common graminoid is <i>Calamagrostis canadensis</i>, and the most common forbs are <i>Chamerion angustifolium</i> and <i>Equisetum arvense</i>. Moss and lichen are minor vegetative components. Two observations of this community phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.3a | <p>Normal time and growth without fire. Graminoid and forb cover decreases. Paper birch seedlings mature and overall cover increases, resulting in a community that resembles that of community phase 1.2. If this phase burns, the resulting community would likely resemble that of community phase 1.3.</p> |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
 58 63.5 69

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 0 1 2

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max

0.25 0.29 0.33

pH: Min RV Max

6.8 7.1 7.4

Subsurface Layer

Thickness (cm): Min RV Max

58 62.5 67

Texture: Extremely gravelly fine sandy loam, silt loam

AWC (cm/cm): Min RV Max

0.06 0.14 0.25

pH: Min RV Max

7.1 7.1 7.2

Influencing Water Features

NWI Code: PEM1

NWI Description: Palustrine, Emergent, Persistent

Rosgen Classification: Steep, entrenched, cascading step-pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 0-30 | 10-50 | 7-20 | 2-3 | 1-50 | 10-15 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 55-55 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-5 | --- | --- |
| FM (4-24 inches) | --- | 0.01-2 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-0.01 | --- |
| SL (8-36 inches) | --- | --- | 1-5 | --- |
| SM (3-10 feet) | --- | --- | 2-7 | --- |
| TR (<15 feet) | --- | --- | --- | 0.01-2 |
| TM (15-40 feet) | --- | --- | --- | 1-1 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ERAN6 | <i>Eriophorum angustifolium</i> | 2-2-2 | 50 | 10.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 35-45-55 | 100 | 67.1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 5-5-5 | 50 | 15.8 |
| EQAR | <i>Equisetum arvense</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 7-11-15 | 100 | 33.2 |
| EQAR | <i>Equisetum arvense</i> | 10-10-10 | 50 | 22.4 |
| ARTI | <i>Artemisia tilesii</i> | 2-2-2 | 50 | 10.0 |
| GABO2 | <i>Galium boreale</i> | 2-2-2 | 50 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SAAR27 | <i>Salix arctica</i> | 5-5-5 | 50 | 15.8 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 3-3-3 | 50 | 12.2 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-2-2 | 50 | 10.0 |
| LEGR | <i>Ledum groenlandicum</i> | 2-2-2 | 50 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 13-13-13 | 50 | 25.5 |
| SAAR27 | <i>Salix arctica</i> | 7-7-7 | 50 | 18.7 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 3-3-3 | 50 | 12.2 |
| ROAC | <i>Rosa acicularis</i> | 3-3-3 | 50 | 12.2 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 3-3-3 | 50 | 12.2 |
| SAIN3 | <i>Salix interior</i> | 3-3-3 | 50 | 12.2 |
| SABE2 | <i>Salix bebbiana</i> | 2-2-2 | 50 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 2-2-2 | 50 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—9-17.5-26

Community Phase 2FL



Rooting Depth (cm): Min RV Max
 20 50.3 87

Restrictive Feature: Permafrost

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 0 5 9

Texture: Silt loam, stratified silt and peat

AWC (cm/cm): Min RV Max
 0.24 0.31 0.35

pH: Min RV Max
 5.5 5.6 5.7

Subsurface Layer

Thickness (cm): Min RV Max
 20 45.3 78

Texture: Silt loam

AWC (cm/cm): Min RV Max
 0.14 0.22 0.25

pH: Min RV Max
 4.7 5.6 6.4

Influencing Water Features

NWI Code: R3UB3

NWI Description: Riverine, Upper Perennial, Unconsolidated Bottom, Mud

Rosgen Classification: Moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools; entrenched, meandering riffle/pool channel of low-gradient with high W/D ratio; steep, entrenched, cascading step-pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-1 | 15-75 | 15-85 | 3-10 | 1-3 | 0-0 | 10-10 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 55-55 | --- | --- | --- |
| FD (<4 inches) | --- | 7-7 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-5 | --- |
| SL (8-36 inches) | --- | --- | 10-7 | --- |
| ST (>10 feet) | --- | --- | 10-10 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-2 |
| TM (15-40 feet) | --- | --- | --- | 15-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-43.3-60 | 100 | 65.8 |
| ARLA2 | <i>Arctagrostis latifolia</i> | 10-10-10 | 33 | 18.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| RANUN | <i>Ranunculus</i> | 7-7-7 | 33 | 15.3 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 10-10-10 | 33 | 18.3 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ANRI | <i>Anemone richardsonii</i> | 10-10-10 | 33 | 18.3 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 3-4-5 | 67 | 16.3 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 25-25-25 | 33 | 28.9 |
| ROAC | <i>Rosa acicularis</i> | 3-5-7 | 100 | 22.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-4-5 | 100 | 20.0 |
| RITR | <i>Ribes triste</i> | 0.1-5.1-10 | 67 | 18.3 |
| SAPU15 | <i>Salix pulchra</i> | 10-10-10 | 33 | 18.3 |
| LEGR | <i>Ledum groenlandicum</i> | 1-2-3 | 67 | 11.5 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 1-1.5-2 | 67 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| SABE2 | <i>Salix bebbiana</i> | 10-10-10 | 33 | 18.3 |
| SAPU15 | <i>Salix pulchra</i> | 5-5-5 | 33 | 12.9 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 5-5-5 | 33 | 12.9 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 15-17.5-20 | 67 | 34.2 |
| SAAR3 | <i>Salix arbusculoides</i> | 10-12.5-15 | 67 | 28.9 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-5-5 | 33 | 12.9 |
| SABE2 | <i>Salix bebbiana</i> | 5-5-5 | 33 | 12.9 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 2-3-5 | 100 | 17.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 7-10.7-15 | 100 | 32.7 |
| PIMA | <i>Picea mariana</i> | 2-3-5 | 100 | 17.3 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—13-21.3-30

Community Phase HCPC



Rooting Depth (cm): Min RV Max
84 84 84

Restrictive Feature: Permafrost

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
0 0 0

Texture: Silt loam

AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
6.6 6.6 6.6

Subsurface Layer

Thickness (cm): Min RV Max
84 84 84

Texture: Extremely gravelly fine sandy loam, silt loam

AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
6.4 6.5 6.5

Influencing Water FeaturesNWI Code: R3UB3NWI Description: Riverine, Upper Perennial, Unconsolidated Bottom, MudRosgen Classification: Entrenched, "gully" step-pool channel on moderate gradients with low W/D ratioStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-1 | 15-15 | 35-35 | 10-10 | 35-35 | 0-0 | 10-10 |

Percent Canopy Cover by Height Class and Type (Min-Max):

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-2 | --- | --- | --- |
| GT (>24 inches) | 10-5 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-20 | --- | --- |
| FT (>24 inches) | --- | 5-5 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-10 | --- |
| SL (8-36 inches) | --- | --- | 0.1-20 | --- |
| ST (>10 feet) | --- | --- | 10-8 | --- |
| TR (<15 feet) | --- | --- | --- | 10-3 |
| TM (15-40 feet) | --- | --- | --- | 2-20 |
| TT (>40 feet) | --- | --- | --- | 20-20 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| POPRA6 | <i>Poa pratensis</i> ssp. <i>alpigena</i> | 2-2-2 | 100 | 14.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ARLA2 | <i>Arctagrostis latifolia</i> | 10-10-10 | 100 | 31.6 |
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 100 | 22.4 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PYGR | <i>Pyrola grandiflora</i> | 1-1-1 | 100 | 10.0 |
| HEAL | <i>Hedysarum alpinum</i> | 1-1-1 | 100 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 20-20-20 | 100 | 44.7 |
| GELI2 | <i>Geocaulon lividum</i> | 10-10-10 | 100 | 31.6 |
| ARTI | <i>Artemisia tilesii</i> | 1-1-1 | 100 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| POAL11 | <i>Polygonum alpinum</i> | 5-5-5 | 100 | 22.4 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 10-10-10 | 100 | 31.6 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 20-20-20 | 100 | 44.7 |
| RITR | <i>Ribes triste</i> | 2-2-2 | 100 | 14.1 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 15-15-15 | 100 | 38.7 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-10-10 | 100 | 31.6 |
| SAAR3 | <i>Salix arbusculoides</i> | 8-8-8 | 100 | 28.3 |
| SABE2 | <i>Salix bebbiana</i> | 2-2-2 | 100 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 10-10-10 | 100 | 31.6 |
| POBA2 | <i>Populus balsamifera</i> | 3-3-3 | 100 | 17.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 20-20-20 | 100 | 44.7 |
| POBA2 | <i>Populus balsamifera</i> | 2-2-2 | 100 | 14.1 |
| BENE4 | <i>Betula neoalaskana</i> | 2-2-2 | 100 | 14.1 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 20-20-20 | 100 | 44.7 |

Site Tree Measurements: Not measured

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 80-80-80 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—30-30-30

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Alpine Dwarf Scrub- Lichen Mosaic Gravelly Hummock

Ecological Classification ID: R231XY101AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Nonsorted circles, solifluction lobes, sorted circles, stripes, and turf hummocks on mountains; turf hummocks on hills

Slope (percent): Min Max
1 35

Elevation (feet): Min Max
3,281 5,905

Range of Aspect Direction: East to northwest (clockwise)

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: Very low

Frost-Free Days: Min Max
50 80

Mean Annual Precipitation (inches): Low High
15 32

Mean Annual Air Temperature (°F): Low High
19 28

Monthly Data:

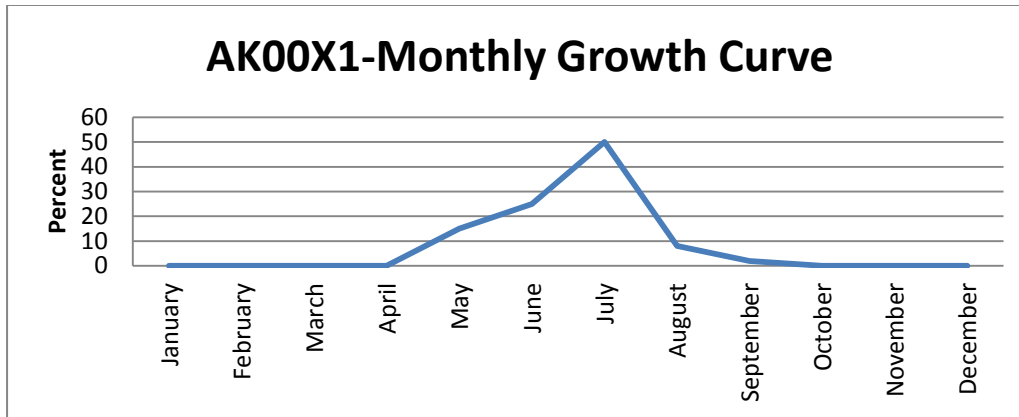
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -26 | 5 |
| February | 0 | 2 | -26 | 14 |
| March | 0 | 2 | -17 | 25 |
| April | 0 | 1 | 0 | 45 |
| May | 0 | 3 | 21 | 59 |
| June | 1 | 7 | 32 | 68 |
| July | 2 | 5 | 36 | 72 |
| August | 2 | 6 | 32 | 66 |
| September | 1 | 5 | 19 | 50 |
| October | 1 | 4 | 1 | 28 |
| November | 1 | 4 | -15 | 14 |
| December | 1 | 3 | -24 | 10 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31MT1—D31-Alpine scrub gravelly circles, acid
 D31MT2—D31-Alpine scrub gravelly circles, acid
 D31MT3—D31-Alpine scrub gravelly circles, acid
 D31UC5—D31-Alpine scrub gravelly circles, acid

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive, acid, subgelic Typic Haploglepts

Dominant Parent Material: Organic material over gravelly cryoturbate

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 10 13 15

pH: Low RV High
 4.2 5.4 6.3

Effective CEC (me/100g): Low High
 13.8 44.7


CEC (me/100g): Min RV Max
 4 24 62

Organic Matter (percent): Low RV High
 2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 1 1.32

Plant Community Phases

| | | | |
|---|--|-------------|-----------|
| Ecological Site Description ID: | R231XY101AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This alpine ecological site generally is on summits and shoulders of mountains with slight slopes (<15% slopes). Earth hummocks, which are associated with cryoturbation, are common in this ecological site. Vegetated soil and surface rock generally are evenly distributed across the site. Surface rock generally is colonized by foliose and crustose lichen. Disturbance that results in other plant community phases has not been observed. This site is similar to site R231XY105AK, but site R231XY101AK has a lower pH in the parent material. The soils in community phase 1.1 are classified as Haplogelepts and are composed of organic matter over gravelly cryoturbate.</p> | | | |
| State and Transition Diagram: | | | |
| <div style="border: 1px solid black; padding: 10px; margin: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> 1. Reference State Alpine dwarf scrub gravelly hummock R231XY101AK </div> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <div style="text-align: center;">1.1 (HCPC)</div> <div style="text-align: center;">mountain avens-mixed dwarf scrub-lichen dwarf scrubland</div> </div> </div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>In the climax phase, the dominant vegetation is a mixture of dwarf shrubs and lichen. Only one phase for the reference state was observed. The height of dwarf scrubs is defined as less than 8 inches.</p> | | |

| | | | |
|--|-----------------------------|--|---|
| Phase 1.1 | |  | |
| Community Phase Number: | 1.1 | Community Phase Name: | Mountain avens-mixed dwarf scrub-lichen dwarf scrubland |
| Community Phase Narrative: | | | |
| <p>The diversity and extent of the dwarf shrub cover is high (15 species; >50% cover), and common species are <i>Dryas octopetala</i>, <i>Salix sp.</i>, and <i>Loiseleuria procumbens</i>. Low and medium shrubs, such as <i>Betula glandulosa</i>, are present but are not dominant vegetative components. The diversity of graminoids and forbs is high, but they are minor vegetative components. Common graminoids include <i>Carex bigelowii</i> and <i>Festuca altaica</i>. The diversity and extent of lichen is high (>20 species; >40% ground cover), but each individual species makes up a limited amount of the cover. Common lichen are <i>Thamnolia subuliformis</i> and <i>Flavocetraria cucullata</i>.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No observed pathway. | | |

Dynamic Soil Properties within Representative Rooting Depth
Community Phase HCPC



Rooting Depth (cm): Min RV Max
 27 54.1 106

Restrictive Features: None recorded

Drainage Class: Somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
 0 2.9 5

Texture: Slightly decomposed plant material, moderately decomposed plant material, gravelly sandy loam, silt loam

AWC (cm/cm): Min RV Max
 0.13 0.31 0.35

pH: Min RV Max
 3.8 4.8 5.6

Subsurface Layer

Thickness (cm): Min RV Max
 27 51.2 101

Texture: Cobbly loam, cobbly silt loam, gravelly sandy loam, very cobbly coarse sandy loam, very cobbly loamy coarse sand, very cobbly silt loam, very gravelly loamy coarse sand, very cobbly sandy loam, very gravelly silt loam, extremely cobbly silt loam, extremely cobbly sandy loam, very gravelly sandy loam, extremely gravelly sandy loam, silt loam, flagstones, very stony sandy loam, extremely flaggy sandy loam

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AWC (cm/cm): Min RV Max
0.04 0.15 0.25

pH: Min RV Max
4.8 5.5 6.4

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 20-80 | 5-40 | 3-30 | 0-2 | 0-5 | 5-75 | 0-5 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GD (<4 inches) | 5-5 | --- | --- | --- |
| GM (4-24 inches) | 10-10 | --- | --- | --- |
| FD (<4 inches) | --- | 1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.01-0.01 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-25 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 2-5.5-10 | 33 | 13.5 |
| LUCO5 | <i>Luzula confusa</i> | 10-10-10 | 8 | 9.1 |

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| FEBR | <i>Festuca brachyphylla</i> | 0.1-10.3-25 | 67 | 26.2 |
| CABI5 | <i>Carex bigelowii</i> | 5-6.2-12 | 50 | 17.6 |
| FEAL | <i>Festuca altaica</i> | 7-10.7-15 | 25 | 16.3 |
| CAPO | <i>Carex podocarpa</i> | 5-6-7 | 17 | 10.0 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ANTEN | <i>Antennaria</i> | 1-3-5 | 33 | 10.0 |
| OXNI | <i>Oxytropis nigrescens</i> | 1-2.2-7 | 42 | 9.6 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ANNA | <i>Anemone narcissiflora</i> | 10-10-10 | 8 | 9.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| DROC | <i>Dryas octopetala</i> | 2-13.1-25 | 100 | 36.2 |
| SAPH | <i>Salix phlebophylla</i> | 2-12.4-25 | 67 | 28.7 |
| LOPR | <i>Loiseleuria procumbens</i> | 0-8.2-20 | 83 | 26.2 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 5-10.8-20 | 50 | 23.3 |
| EMNI | <i>Empetrum nigrum</i> | 1-8.6-15 | 58 | 22.4 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 0-5.9-10 | 67 | 19.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 0-5.6-10 | 58 | 18.0 |
| SAAR27 | <i>Salix arctica</i> | 1-7.8-15 | 33 | 16.1 |
| CATE11 | <i>Cassiope tetragona</i> | 0-5-15 | 50 | 15.8 |
| DILA | <i>Diapensia lapponica</i> | 6-7-8 | 17 | 10.8 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 6-6.5-7 | 17 | 10.4 |
| B EGL | <i>Betula glandulosa</i> | 10-10-10 | 8 | 9.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| B EGL | <i>Betula glandulosa</i> | 1-4.4-10 | 42 | 13.5 |
| VAUL | <i>Vaccinium uliginosum</i> | 10-10-10 | 8 | 9.1 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | | Caribou | Summer |
| Slight use | Grasses and sedges | Caribou | Summer |
| Slight use | Grasses and sedges | Dall sheep | Unknown |
| Slight use | Other | Caribou | Spring |

Notable Plants: *Stellaria alaskana*, *Poa porsildii*

Species Richness: Number of stops—12; plant species per stop (min-avg-max)—22-28.7-33

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Alpine Dwarf Scrub- Lichen Mosaic Gravelly Slopes, Basic

Ecological Classification ID: R231XY105AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Nonsorted circles on mountains, mountains

Slope (percent): Min Max
25 75

Elevation (feet): Min Max
2,953 4,921

Range of Aspect Direction: Southeast to northwest (clockwise)

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: High

Frost-Free Days: Min Max
50 80

Mean Annual Precipitation (inches): Low High
15 20

Mean Annual Air Temperature (°F): Low High
21 25

Monthly Data:

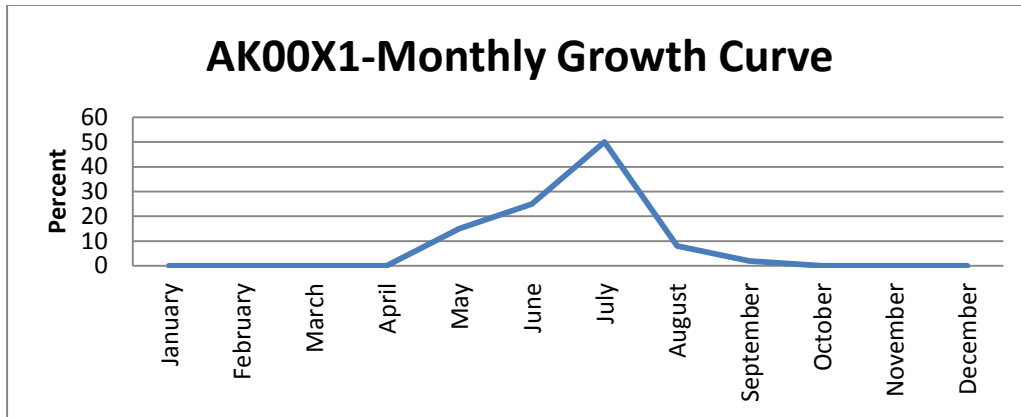
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -26 | 5 |
| February | 0 | 2 | -26 | 14 |
| March | 0 | 2 | -17 | 25 |
| April | 0 | 1 | 0 | 45 |
| May | 0 | 3 | 21 | 59 |
| June | 1 | 7 | 32 | 68 |
| July | 2 | 5 | 36 | 72 |
| August | 2 | 6 | 32 | 66 |
| September | 1 | 5 | 19 | 50 |
| October | 1 | 4 | 1 | 28 |
| November | 1 | 4 | -15 | 14 |
| December | 1 | 3 | -24 | 10 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31OM1—D31-Alpine scrub silty circles

D31OM2—D31-Alpine scrub silty circles

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive, calcareous, subgelic Typic Haplogelolls

Dominant Parent Material: Loess over gravelly cryoturbate

Representative Surface Texture: Silt loam

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 10 13 16

pH: Low RV High
 5.6 6.9 8.2

Effective CEC (me/100g): Low High
 5.7 9

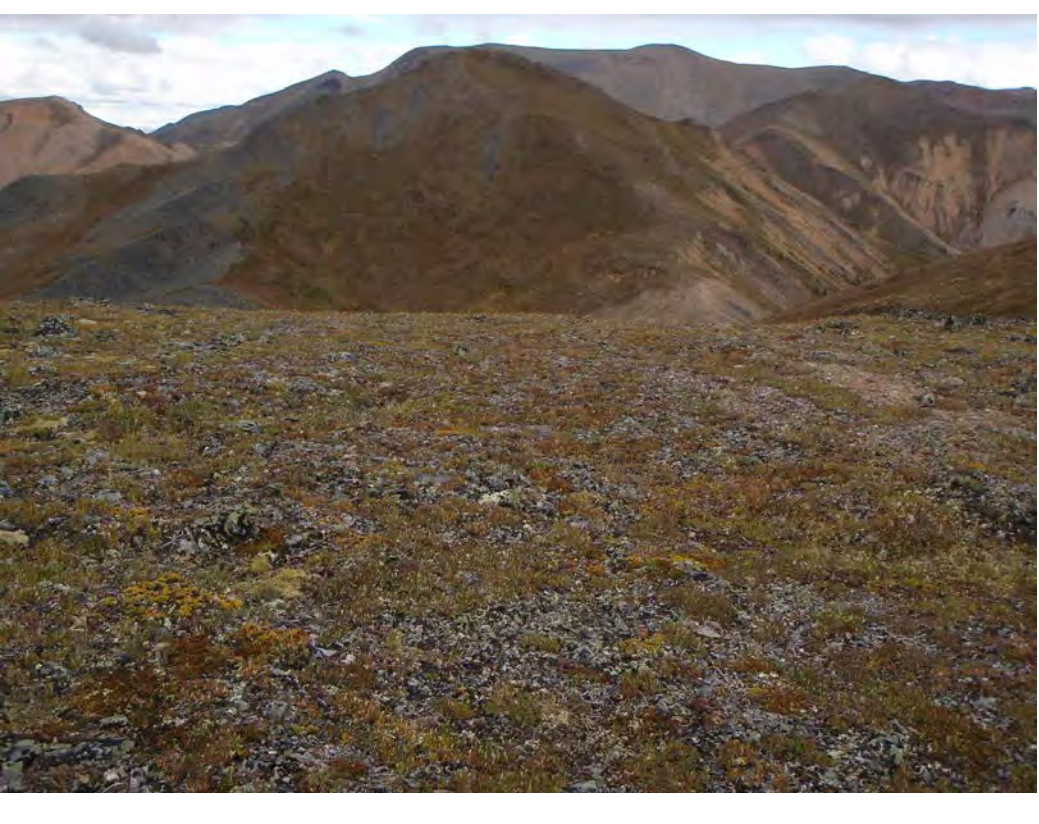
CEC (me/100g): Min RV Max
 3.2 4.7 6

Organic Matter (percent): Low RV High
 2 4.7 6

Bulk Density (1/3-Bar): Min RV Max
 0.94 1.2 1.32

Plant Community Phases

| | | | | | | | | | | | | | | | | | | | |
|--|---|------------------------------------|-------------|------------|-----------------|------------------------------------|-------------|--|--|--|--|------------|--|--|--|---|--|--|--|
| Ecological Site Description ID: | R231XY105AK | | | | | | | | | | | | | | | | | | |
| Ecological Dynamics of the Site: | | | | | | | | | | | | | | | | | | | |
| <p>This alpine ecological site is on summits, shoulders, and backslopes underlain by limestone in the Ogilvie Mountains of eastern Alaska. Earth hummocks, which are associated with cryoturbation, are common. The soils are rocky, and exposed rock fragments are common. Dwarf shrubs and fruticose lichen are the dominant vegetation. Crustose and foliose lichen generally colonize on bare surfaces or surface rocks. Disturbance resulting in additional phases of this reference state were not identified. The site is similar to site R231XY101AK, but site R231XY105AK has higher pH in the parent material. The soils in community phase 1.1 are classified as Haplogelolls and are composed of organic matter over loess and gravelly colluvium.</p> | | | | | | | | | | | | | | | | | | | |
| State and Transition Diagram: | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>1.</td> <td>Reference State</td> <td>Alpine dwarf scrub gravelly slopes</td> <td>R231XY105AK</td> </tr> <tr> <td colspan="4"> <table border="1"> <tr> <td colspan="4">1.1 (HCPC)</td> </tr> <tr> <td colspan="4">Mountain avens-mixed dwarf scrub-lichen-dwarf scrubland</td> </tr> </table> </td> </tr> </table> | | | | 1. | Reference State | Alpine dwarf scrub gravelly slopes | R231XY105AK | <table border="1"> <tr> <td colspan="4">1.1 (HCPC)</td> </tr> <tr> <td colspan="4">Mountain avens-mixed dwarf scrub-lichen-dwarf scrubland</td> </tr> </table> | | | | 1.1 (HCPC) | | | | Mountain avens-mixed dwarf scrub-lichen-dwarf scrubland | | | |
| 1. | Reference State | Alpine dwarf scrub gravelly slopes | R231XY105AK | | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td colspan="4">1.1 (HCPC)</td> </tr> <tr> <td colspan="4">Mountain avens-mixed dwarf scrub-lichen-dwarf scrubland</td> </tr> </table> | | | | 1.1 (HCPC) | | | | Mountain avens-mixed dwarf scrub-lichen-dwarf scrubland | | | | | | | | | | | |
| 1.1 (HCPC) | | | | | | | | | | | | | | | | | | | |
| Mountain avens-mixed dwarf scrub-lichen-dwarf scrubland | | | | | | | | | | | | | | | | | | | |
| State and Transition Diagram: | 1 | State Name: | Reference | | | | | | | | | | | | | | | | |
| State Narrative: | <p>For the climax phase, the dominant vegetation is a mixture of dwarf shrubs and lichen. The height of dwarf scrubs is defined as less than 8 inches. The reference state has one community phase.</p> | | | | | | | | | | | | | | | | | | |

| | | | |
|---|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Mountain avens-mixed dwarf scrub-lichen-dwarf scrubland |
| Community Phase Narrative: | | | |
| <p>The diversity of dwarf shrubs is high (13 species), and the most abundant and common species are <i>Dryas octopetala</i>, <i>Cassiope tetragona</i>, and <i>Salix reticulata</i>. The lichen cover generally is more than 50%. The diversity of lichen is high (20 species), and the most abundant and common species are <i>Thamnolia subuliformis</i>, <i>Flavocetraria cucullata</i>, <i>Cladonia sp.</i>, and <i>Dactylina arctica</i>. Although the diversity of graminoids and forbs is high, they are minor vegetative components. Common forbs and graminoids are <i>Silene acaulis</i> and <i>Carex scirpoidea</i>.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No pathways observed. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase HCPC



Rooting Depth (cm): Min RV Max
12 49.6 93

Restrictive Feature: Lithic bedrock

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
0 1.9 11

Texture: Gravelly silt loam, silt loam, sandy loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.14 0.28 0.35

pH: Min RV Max
5 6.7 8.2

Subsurface Layer

Thickness (cm): Min RV Max
12 47.7 82

Texture: Bedrock, gravelly fine sandy loam, cobbles, gravelly loam, cobbly fine sandy loam, cobbly silt loam, cobbly sandy loam, gravelly silt loam, gravelly sandy loam, very gravelly coarse sandy loam, very gravelly fine sandy loam, very cobbly silt loam, very cobbly sandy loam, extremely cobbly fine sandy loam, very gravelly silt loam, extremely cobbly silt loam, extremely cobbly sandy loam, very gravelly sandy loam, very gravelly very fine sandy loam, extremely gravelly coarse sand, extremely gravelly sandy loam, silt loam, extremely channery sandy loam, stony silt loam, very stony fine sandy loam, very stony silt loam, gravel, extremely stony sandy loam

AWC (cm/cm): Min RV Max
0.02 0.17 0.25

pH: Min RV Max
5.6 7.2 8.4

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-90 | 2-65 | 2-55 | 0-0 | 0-5 | 1-95 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GD (<4 inches) | 2-2 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-2 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-7 | --- |
| ST (>10 feet) | --- | --- | 1-1 | --- |
| TS (<15 feet) | --- | --- | --- | 0.01-0.01 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| CASC10 | <i>Carex scirpoidea</i> | 1-5.8-15 | 69 | 20.1 |
| CAPO | <i>Carex podocarpa</i> | 1-7.9-15 | 31 | 15.6 |
| FEAL | <i>Festuca altaica</i> | 1-6.4-10 | 27 | 13.2 |
| FEBR | <i>Festuca brachyphylla</i> | 1-3.2-5 | 35 | 10.6 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| SIAC | <i>Silene acaulis</i> | 0-3-10 | 81 | 15.4 |
| OXNI | <i>Oxytropis nigrescens</i> | 1-4.1-10 | 54 | 14.8 |
| TOCO | <i>Tofieldia coccinea</i> | 0-2.6-5 | 62 | 12.6 |
| POVI3 | <i>Polygonum viviparum</i> | 0-2.1-5 | 58 | 11.1 |
| SAOP | <i>Saxifraga oppositifolia</i> | 0-1.9-8 | 50 | 9.7 |
| MIYU | <i>Minuartia yukonensis</i> | 0.1-3.3-15 | 27 | 9.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| LUAR2 | <i>Lupinus arcticus</i> | 1-6.4-10 | 31 | 14.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------|---------------------------------|------------------|----------------------------|
| DROC | <i>Dryas octopetala</i> | 2-40.1-65 | 100 | 63.3 |
| CATE11 | <i>Cassiope tetragona</i> | 0-7.9-45 | 69 | 23.5 |
| SARE2 | <i>Salix reticulata</i> | 0-9.7-25 | 50 | 22.0 |
| SAAR27 | <i>Salix arctica</i> | 1-8.1-35 | 46 | 19.3 |
| SAPH | <i>Salix phlebophylla</i> | 2-7.6-15 | 27 | 14.3 |
| RHLA2 | <i>Rhododendron lapponicum</i> | 1-5.6-10 | 27 | 12.2 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-5-10 | 27 | 11.6 |
| LOPR | <i>Loiseleuria procumbens</i> | 1-6.2-15 | 19 | 10.9 |
| EMNI | <i>Empetrum nigrum</i> | 0-4.8-15 | 23 | 10.6 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 0-2.9-7 | 35 | 10.0 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-2.4-7 | 35 | 9.2 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Lichen | Dall sheep | Summer |
| No observed use | | | Not grazed/browsed |
| Slight use | Forbs, ferns, and | Dall sheep | Summer |
| Slight use | Grasses and sedges | Other | Unknown |
| Slight use | Lichen | Dall sheep | Summer |
| Unknown | | | Unknown |

Notable Plants: *Minuartia yukonensis*

Species Richness: Number of stops—26; plant species per stop (min-avg-max)—20-32.2-44

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Scrub Gravelly Slopes, Dry

Ecological Classification ID: R231XY109AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Escarpments

Slope (percent): Min Max
50 100

Elevation (feet): Min Max
643 1,332

Range of Aspect Direction: Southeast to west (clockwise)

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: High

Frost-Free Days: Min Max
20 110

Mean Annual Precipitation (inches): Low High
10 20

Mean Annual Air Temperature (°F): Low High
23 28

Monthly Data:

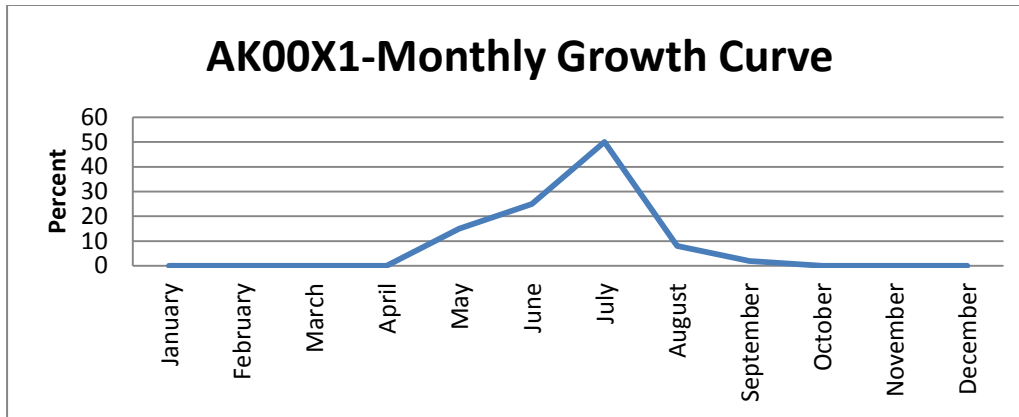
| <u>Month</u> | <u>Precipitation (in)</u> | <u>Precipitation (in)</u> | <u>Temperature (°F)</u> | <u>Temperature (°F)</u> |
|--------------|---------------------------|---------------------------|-------------------------|-------------------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH2—D31-Boreal scrub rocky colluvial escarpments

D31LB2—D31-Boreal scrub rocky colluvial escarpments

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive Ustic Calcicryepts

Dominant Parent Material: Gravelly colluvium

Representative Surface Texture: Silt loam

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 6 13 19

pH: Low RV High
 6.5 7.8 9.6

Effective CEC (me/100g): Low High
 5.7 9


CEC (me/100g): Min RV Max
 5.1 6.9 9.1


Organic Matter (percent): Low RV High
 2 3.3 6

Bulk Density (1/3-Bar): Min RV Max
 1.08 1.1 1.26

Plant Community Phases

| | | | |
|--|---|-------------|-----------|
| Ecological Site Description ID: | R231XY109AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is on very steep, south-facing slopes of escarpments (slopes average 80%). The soils have an argillite lithology and are unstable. The soils in community phase 1.1 are classified as Calcicryepts and are composed of gravelly colluvium.</p> <p>Fire resulted in two documented phases. Fire is a natural and typically unmanaged disturbance regime.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div>Boreal scrub gravelly slope dry</div><div>R231XY109AK</div><div><div>1.1 (HCPC) Sagebrush-moss-lichen-scrubland</div><div>1.1a</div><div>1.2 (2FE) Prickly rose-sagebrush-mixed grass-scrubland</div><div>1.2a</div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state were grouped according to the time since the last disturbance. As the time since the last fire increases, grasses become less dominant and sagebrush becomes more dominant.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|---|---|-----------------------|---------------------------------|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Sagebrush-Moss-Lichen-Scrubland |
| Community Phase Narrative: | | | |
| <p>The dominant vegetation is sagebrush. The tree cover is present in trace amounts, and the only species observed is <i>Populus tremuloides</i>. Shrubs make up ~60% cover and are primarily in the dwarf and medium shrub strata. The most common species is <i>Artemisia frigida</i>. Graminoids and forbs are minor vegetative components. Moss and lichen are evenly distributed, covering ~50% of the ground surface.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | <p>Fire. The soils are well drained, and fire appears to consume the organic matter. Due to the steepness slope and loss of vegetation, fire might increase the likelihood of landslides.</p> | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Prickly Rose-Sagebrush-Mixed grass-Scrubland |
| Community Phase Narrative: | | | |
| <p>The dominant vegetation is a mixture of shrubs and grasses. The tree cover is present in trace amounts, and the only species observed is <i>Populus tremuloides</i>. Shrubs make up ~30% cover and are primarily in the dwarf and low shrub strata. The most common low shrub is <i>Rosa acicularis</i>, and the most common dwarf shrub is <i>Artemisia frigida</i>. Grass makes up ~30% cover. The most common grass species are <i>Calamagrostis purpurascens</i> and <i>Elymus trachycaulus</i>. The diversity of forbs is high (14 species), but the overall cover is limited. Lichen and moss cover is limited as compared to phase 1.1.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Normal time and growth without fire. The plant community becomes dominantly sagebrush. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
 34 63.3 87

Restrictive Feature: Paralithic bedrock

Drainage Class: Excessively drained

Surface Layer

Thickness (cm): Min RV Max
 0 0 0

Texture: Silt loam, sandy loam

AWC (cm/cm): Min RV Max
 0.15 0.25 0.25

pH: Min RV Max
 6.9 7.4 7.9

Subsurface Layer

Thickness (cm): Min RV Max
 34 63.3 87

Texture: Gravelly silt loam, very gravelly silt loam, channers, very channery silt loam, loam, extremely channery coarse sandy loam, extremely channery silt loam, flagstones, extremely parachannery sandy loam

AWC (cm/cm): Min RV Max
 0.02 0.17 0.24

pH: Min RV Max
 5.2 7 8.3

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-10 | 0-30 | 1-60 | 0-3 | 5-60 | 10-70 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-10 | --- | --- | --- |
| GT (>24 inches) | 15-15 | --- | --- | --- |
| FM (4-24 inches) | --- | 1-5 | --- | --- |
| SL (8-36 inches) | --- | --- | 2-4 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ELTRS | <i>Elymus trachycaulus</i> <i>ssp. subsecundus</i> | 40-40-40 | 17 | 25.8 |
| ELYMU | <i>Elymus</i> | 40-40-40 | 17 | 25.8 |
| CAPU | <i>Calamagrostis purpurascens</i> | 0.1-8.4-15 | 50 | 20.5 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| CAPU | <i>Calamagrostis purpurascens</i> | 15-25-35 | 33 | 28.9 |
| ELTRS | <i>Elymus trachycaulus</i> <i>ssp. subsecundus</i> | 15-25-35 | 33 | 28.9 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| GABO2 | <i>Galium boreale</i> | 0.1-1.5-3 | 100 | 12.4 |
| SOMU | <i>Solidago multiradiata</i> | 1-3-5 | 50 | 12.2 |
| ACMI2 | <i>Achillea millefolium</i> | 1-3-5 | 50 | 12.2 |
| PUPA5 | <i>Pulsatilla patens</i> | 1-1.4-2 | 83 | 10.8 |
| SIRE3 | <i>Silene repens</i> | 5-5-5 | 17 | 9.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| ARFR4 | <i>Artemisia frigida</i> | 20-28.3-40 | 50 | 37.6 |
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 17 | 9.1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 4-12.2-15 | 67 | 28.6 |
| ARFR4 | <i>Artemisia frigida</i> | 10-10-10 | 17 | 12.9 |
| AMAL2 | <i>Amelanchier alnifolia</i> | 10-10-10 | 17 | 12.9 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 10-10-10 | 17 | 12.9 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 5-5-5 | 17 | 9.1 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Unknown | | | Unknown |

Notable Plants: *Draba densifolia*, *Apocynum androsaemifolium*

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—11-13.5-17

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 27 83.3 117

Restrictive Features: None recorded

Drainage Class: Excessively drained

Surface Layer

Thickness (cm): Min RV Max
 0 0 0

Texture: Silt loam, loam, very gravelly sandy loam, very gravelly coarse sandy loam

AWC (cm/cm): Min RV Max
 0.08 0.15 0.24

pH: Min RV Max
 7.4 8 8.3

Subsurface Layer

Thickness (cm): Min RV Max
 27 83.3 117

Texture: Gravelly loam, gravelly silt loam, very gravelly coarse sandy loam, very gravelly loam, very gravelly sandy loam

AWC (cm/cm): Min RV Max
 0.09 0.17 0.24

pH: Min RV Max
 5.6 7.3 8.2

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-40 | 3-45 | 20-30 | 0-7 | 5-35 | 5-8 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 4-4 | --- | --- | --- |
| FD (<4 inches) | --- | 6-6 | --- | --- |
| FM (4-24 inches) | --- | 1-5 | --- | --- |
| FT (>24 inches) | --- | 4-4 | --- | --- |
| SM (3-10 feet) | --- | --- | 2-60 | --- |
| TR (<15 feet) | --- | --- | --- | 2-2 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| PSSPS | <i>Pseudoroegneria spicata</i> ssp. <i>spicata</i> | 4-4-4 | 33 | 11.5 |
| BRINP5 | <i>Bromus inermis</i> ssp. <i>pumpellianus</i> var. <i>pumpellianus</i> | 4-4-4 | 33 | 11.5 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERCA2 | <i>Erigeron caespitosus</i> | 6-6-6 | 33 | 14.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| PUPA5 | <i>Pulsatilla patens</i> | 5-5-5 | 33 | 12.9 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| POPE8 | <i>Potentilla pensylvanica</i> | 4-4-4 | 33 | 11.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| ARFR4 | <i>Artemisia frigida</i> | 60-60-60 | 33 | 44.7 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| ARFR4 | <i>Artemisia frigida</i> | 60-65-70 | 67 | 65.8 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—8-8.7-10

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Alpine Dwarf Scrub-Graminoid Mosaic Loamy Mound

Ecological Classification ID: R231XY113AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Solifluction lobes on mountains

Slope (percent): Min Max

20 55

Elevation (feet): Min Max

3,281 4,921

Range of Aspect Direction: East to west (clockwise)

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

15 32

Mean Annual Air Temperature (°F): Low High

19 28

Monthly Data:

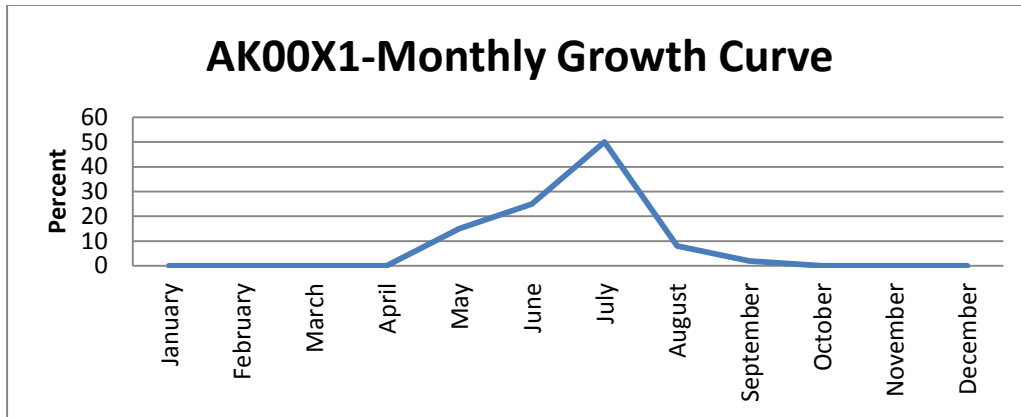
| <u>Month</u> | <u>Precipitation (in)</u> | <u>Precipitation (in)</u> | <u>Temperature (°F)</u> | <u>Temperature (°F)</u> |
|--------------|---------------------------|---------------------------|-------------------------|-------------------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -26 | 5 |
| February | 0 | 2 | -26 | 14 |
| March | 0 | 2 | -17 | 25 |
| April | 0 | 1 | 0 | 45 |
| May | 0 | 3 | 21 | 59 |
| June | 1 | 7 | 32 | 68 |
| July | 2 | 5 | 36 | 72 |
| August | 2 | 6 | 32 | 66 |
| September | 1 | 5 | 19 | 50 |
| October | 1 | 4 | 1 | 28 |
| November | 1 | 4 | -15 | 14 |
| December | 1 | 3 | -24 | 10 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31MT3—D31-Alpine low scrub loamy solifluction lobes

Characteristics of Representative Soil Components

Soil Classification: Sandy or sandy-skeletal, mixed, subgelic Oxyaquic Gelorthents

Dominant Parent Material: Organic material over gravelly cryoturbate

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Sandy or sandy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 13 20 27

pH: Low RV High
 4 5.8 6.7

Effective CEC (me/100g): Low High
 21 50


CEC (me/100g): Min RV Max
 3.5 23.2 62


Organic Matter (percent): Low RV High
 0.9 29 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 1 1.58

Plant Community Phases

| | | | | | | | | | | | |
|--|--|-------------|---|---|---|-------------|--|--|--|---|---|
| Ecological Site Description ID: | R231XY113AK | | | | | | | | | | |
| Ecological Dynamics of the Site: | | | | | | | | | | | |
| <p>This alpine ecological site generally is on steeper backslopes of mountains (>20% slopes). In this ecological site, cryoturbation resulted in patterned ground features known as solifluction lobes. The soils in community phase 1.1 are classified as Gelorthents and are composed of organic matter over sandy and gravelly cryoturbate. The sites are characterized by large areas of scalloped terrain. Two plant communities are associated with the solifluction lobes, occurring separately on the interlobes (community 1.1) and lobe fronts (community 1.1d). Lobe fronts are the steep faces on the downhill side of the solifluction lobes, and interlobes are the large, relatively smooth areas between the lobe fronts. Disturbances resulting in other community phases were not observed.</p> | | | | | | | | | | | |
| State and Transition Diagram: | | | | | | | | | | | |
| <table border="1"> <tr> <td>1. Reference State</td> <td>Alpine dwarf scrub-graminoid mosaic loamy mound</td> <td>R231XY113AK</td> </tr> <tr> <td colspan="3"> <table border="1"> <tr> <td> 1.1 (HCPC) Mixed dwarf scrub-sedge dwarf scrubland mosaic </td> <td> 1.1 d (HPCD) Mixed low and dwarf scrub-graminoid dwarf scrubland mosaic dry </td> </tr> </table> </td> </tr> </table> | | | | 1. Reference State | Alpine dwarf scrub-graminoid mosaic loamy mound | R231XY113AK | <table border="1"> <tr> <td> 1.1 (HCPC) Mixed dwarf scrub-sedge dwarf scrubland mosaic </td> <td> 1.1 d (HPCD) Mixed low and dwarf scrub-graminoid dwarf scrubland mosaic dry </td> </tr> </table> | | | 1.1 (HCPC) Mixed dwarf scrub-sedge dwarf scrubland mosaic | 1.1 d (HPCD) Mixed low and dwarf scrub-graminoid dwarf scrubland mosaic dry |
| 1. Reference State | Alpine dwarf scrub-graminoid mosaic loamy mound | R231XY113AK | | | | | | | | | |
| <table border="1"> <tr> <td> 1.1 (HCPC) Mixed dwarf scrub-sedge dwarf scrubland mosaic </td> <td> 1.1 d (HPCD) Mixed low and dwarf scrub-graminoid dwarf scrubland mosaic dry </td> </tr> </table> | | | 1.1 (HCPC) Mixed dwarf scrub-sedge dwarf scrubland mosaic | 1.1 d (HPCD) Mixed low and dwarf scrub-graminoid dwarf scrubland mosaic dry | | | | | | | |
| 1.1 (HCPC) Mixed dwarf scrub-sedge dwarf scrubland mosaic | 1.1 d (HPCD) Mixed low and dwarf scrub-graminoid dwarf scrubland mosaic dry | | | | | | | | | | |
| State and Transition Diagram: | 1 | State Name: | Reference | | | | | | | | |
| State Narrative: | <p>Interlobe vegetation is dominantly a mixture of dwarf shrubs and sedges, and lobe front vegetation is dominantly a mixture of low shrubs and graminoids.</p> <p>The height of dwarf scrubs is defined as less than 8 inches and the height of low scrubs is defined as 8 inches to 3 feet. The gently sloping areas associated with the interlobes have limited drainage and moister soils as compared to the areas on the lobe fronts. Ponded water generally is in interlobe communities.</p> | | | | | | | | | | |

| | | | |
|--|--|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Mixed dwarf scrub-sedge dwarf scrubland mosaic |
| Community Phase Narrative: | | | |
| <p>Graminoids generally exceed 30% cover. Sedges make up the majority of graminoid cover, and a common species is <i>Carex bigelowii</i>. The diversity and cover of dwarf shrubs is high (17 species; more than 40% cover), but the majority of the individual species makes up limited cover. The most abundant dwarf shrub species are <i>Dryas octopetala</i> and <i>Empetrum nigrum</i>. The diversity of forbs is high, but they are a minor vegetative component. Lichen and moss ground cover is limited. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No pathway observed. | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.1d |  | | |
| Community Phase Number: | 1.1d | Community Phase Name: | Mixed low and dwarf scrub-graminoid dwarf scrubland mosaic dry |
| Community Phase Narrative: | | | |
| <p>Shrubs on the lobe front commonly reach a height of 1 meter. The shrub cover of the lobe front community is almost double that of the interlobe community. The diversity of the shrubs is high (12 species), and the dominant species are <i>Betula glandulosa</i>, <i>Dryas octopetala</i>, and <i>Salix sp.</i> The graminoid cover is more abundant than the forb cover, and it consists of a mixture of sedges and grasses. Lichen and feathermoss are abundant components of the ground cover. Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No pathway observed | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 67 67 67

Restrictive Features: None recorded

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 5 5 5

Texture: Mucky peat, slightly decomposed plant material, stony muck

AWC (cm/cm): Min RV Max
 0.32 0.33 0.35

pH: Min RV Max
 5.4 5.4 5.4

Subsurface Layer

Thickness (cm): Min RV Max
 62 62 62

Texture: Very gravelly loamy coarse sand, very stony coarse sandy loam

AWC (cm/cm): Min RV Max
 0.04 0.08 0.13

pH: Min RV Max
 5.4 5.5 5.6

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 10-25 | 15-30 | 5-10 | 0-2 | 0-20 | 2-15 | 0-20 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 12-2 | --- | --- | --- |
| GT (>24 inches) | 2-2 | --- | --- | --- |
| FD (<4 inches) | --- | 2-5 | --- | --- |
| FM (4-24 inches) | --- | 2-7 | --- | --- |
| FT (>24 inches) | --- | 3-3 | --- | --- |
| SD (<8 inches) | --- | --- | 18-9 | --- |
| SL (8-36 inches) | --- | --- | 7-8 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 45-45-45 | 33 | 38.7 |
| CAREX | <i>Carex</i> | 2-11.3-20 | 100 | 33.7 |
| ERAN6 | <i>Eriophorum angustifolium</i> | 10-10-10 | 33 | 18.3 |
| HIAL3 | <i>Hierochloe alpina</i> | 5-5-5 | 33 | 12.9 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| POVI3 | <i>Polygonum viviparum</i> | 5-5-5 | 33 | 12.9 |
| PYGR | <i>Pyrola grandiflora</i> | 1-1.5-2 | 67 | 10.0 |
| TOCO | <i>Tofieldia coccinea</i> | 3-3-3 | 33 | 10.0 |
| ASUM2 | <i>Astragalus umbellatus</i> | 3-3-3 | 33 | 10.0 |
| PELA14 | <i>Pedicularis lanata</i> | 3-3-3 | 33 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| SAAN3 | <i>Saussurea angustifolia</i> | 7-7-7 | 33 | 15.3 |
| POBI5 | <i>Polygonum bistorta</i> | 1-2.5-4 | 67 | 12.9 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 3-3-3 | 33 | 10.0 |
| SAANA3 | <i>Saussurea angustifolia</i> var. <i>angustifolia</i> | 3-3-3 | 33 | 10.0 |
| SANEP2 | <i>Saxifraga nelsoniana</i> ssp. <i>porsildiana</i> | 3-3-3 | 33 | 10.0 |
| ANNA | <i>Anemone narcissiflora</i> | 3-3-3 | 33 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| VACA3 | <i>Valeriana capitata</i> | 3-3-3 | 33 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 2-8.3-18 | 100 | 28.9 |
| DRYAS | <i>Dryas</i> | 25-25-25 | 33 | 28.9 |
| DROC | <i>Dryas octopetala</i> | 1-8-15 | 67 | 23.1 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-4.3-9 | 100 | 20.8 |
| RHLA2 | <i>Rhododendron lapponicum</i> | 9-9-9 | 33 | 17.3 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 9-9-9 | 33 | 17.3 |
| CATE11 | <i>Cassiope tetragona</i> | 1-2.5-4 | 67 | 12.9 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-5-5 | 33 | 12.9 |
| SALIX | <i>Salix</i> | 5-5-5 | 33 | 12.9 |
| LOPR | <i>Loiseleuria procumbens</i> | 5-5-5 | 33 | 12.9 |
| SAAR27 | <i>Salix arctica</i> | 5-5-5 | 33 | 12.9 |
| SAPU15 | <i>Salix pulchra</i> | 5-5-5 | 33 | 12.9 |
| SARE2 | <i>Salix reticulata</i> | 4-4-4 | 33 | 11.5 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| BEGL | <i>Betula glandulosa</i> | 5-6-7 | 67 | 20.0 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-4.5-8 | 67 | 17.3 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | | | Spring |
| Unknown | | | Unknown |
| Unknown | Other | Caribou | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—27-29.3-31

Community Phase HCPCD



Rooting Depth (cm): Min RV Max
 65 65 65

Restrictive Features: None recorded

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 7 7 7

Texture: Slightly decomposed plant material, stony slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.27 0.31 0.35

pH: Min RV Max
 4.7 4.7 4.7

Subsurface Layer

Thickness (cm): Min RV Max
 58 58 58

Texture: Extremely stony silt loam

AWC (cm/cm): Min RV Max
 0.08 0.19 0.24

pH: Min RV Max
 5.2 5.2 5.2

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 25-30 | 37-40 | 5-43 | 0-5 | 1-2 | 5-5 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-4 | --- | --- | --- |
| FD (<4 inches) | --- | 1-4 | --- | --- |
| FM (4-24 inches) | --- | 1-4 | --- | --- |
| SD (<8 inches) | --- | --- | 10-6 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| CACA12 | <i>Carex capillaris</i> | 20-20-20 | 50 | 31.6 |
| CASC10 | <i>Carex scirpoidea</i> | 15-15-15 | 50 | 27.4 |
| CABI5 | <i>Carex bigelowii</i> | 4-4-4 | 50 | 14.1 |
| HIAL3 | <i>Hierochloe alpina</i> | 4-4-4 | 50 | 14.1 |
| CAREX | <i>Carex</i> | 1-1.5-2 | 100 | 12.2 |
| FEBR | <i>Festuca brachyphylla</i> | 2-2-2 | 50 | 10.0 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| POVI3 | <i>Polygonum viviparum</i> | 1-2-3 | 100 | 14.1 |
| POBI5 | <i>Polygonum bistorta</i> | 4-4-4 | 50 | 14.1 |
| PELA | <i>Pedicularis labradorica</i> | 3-3-3 | 50 | 12.2 |
| CALA7 | <i>Campanula lasiocarpa</i> | 3-3-3 | 50 | 12.2 |
| HUSES | <i>Huperzia selago</i> var. <i>selago</i> | 3-3-3 | 50 | 12.2 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ACDE2 | <i>Aconitum delphiniifolium</i> | 2-3-4 | 100 | 17.3 |
| ANNA | <i>Anemone narcissiflora</i> | 3-3-3 | 50 | 12.2 |
| SANE3 | <i>Saxifraga nelsoniana</i> | 2-2-2 | 50 | 10.0 |
| ARLE2 | <i>Arnica lessingii</i> | 2-2-2 | 50 | 10.0 |
| PELA14 | <i>Pedicularis lanata</i> | 2-2-2 | 50 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| DROC | <i>Dryas octopetala</i> | 40-40-40 | 50 | 44.7 |
| B EGL | <i>Betula glandulosa</i> | 35-35-35 | 50 | 41.8 |
| EMNI | <i>Empetrum nigrum</i> | 1-8-15 | 100 | 28.3 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 0-7.5-15 | 100 | 27.4 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 15-15-15 | 50 | 27.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 3-6.5-10 | 100 | 25.5 |
| SAPU15 | <i>Salix pulchra</i> | 10-10-10 | 50 | 22.4 |
| SANI10 | <i>Salix niphoclada</i> | 10-10-10 | 50 | 22.4 |
| CATE11 | <i>Cassiope tetragona</i> | 2-3-4 | 100 | 17.3 |
| DILA | <i>Diapensia lapponica</i> | 6-6-6 | 50 | 17.3 |
| SALIX | <i>Salix</i> | 5-5-5 | 50 | 15.8 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 2-2-2 | 50 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | | | Spring |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—28-34.5-41

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Alpine Dwarf Scrub-Lichen Mosaic Peat Hummock

Ecological Classification ID: R231XY114AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Rounded mountains, turf hummocks on mountains

Slope (percent): Min Max
1 30

Elevation (feet): Min Max
3,281 4,921

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max
2 40

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max
50 80

Mean Annual Precipitation (inches): Low High
15 32

Mean Annual Air Temperature (°F): Low High
19 28

Monthly Data:

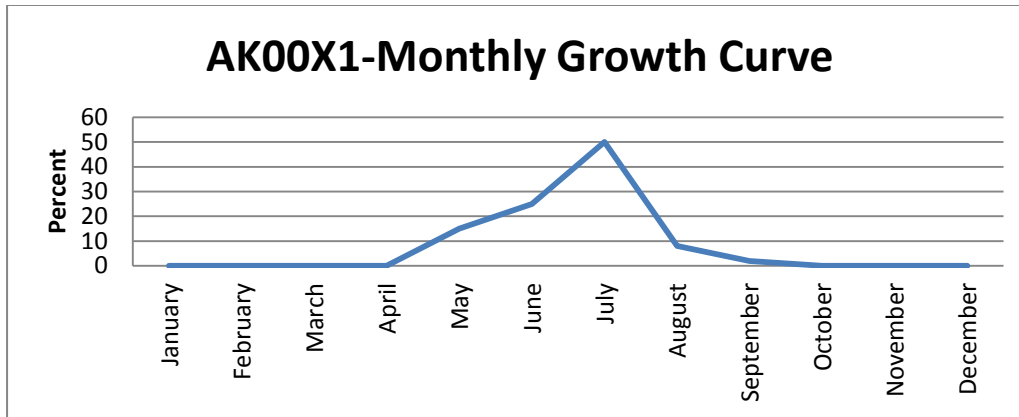
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -26 | 5 |
| February | 0 | 2 | -26 | 14 |
| March | 0 | 2 | -17 | 25 |
| April | 0 | 1 | 0 | 45 |
| May | 0 | 3 | 21 | 59 |
| June | 1 | 7 | 32 | 68 |
| July | 2 | 5 | 36 | 72 |
| August | 2 | 6 | 32 | 66 |
| September | 1 | 5 | 19 | 50 |
| October | 1 | 4 | 1 | 28 |
| November | 1 | 4 | -15 | 14 |
| December | 1 | 3 | -24 | 10 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31MT2—D31-Alpine scrub loamy hummocks, frozen

D31MT3—D31-Alpine scrub loamy hummocks, frozen

D31UC5—D31-Alpine scrub loamy hummocks, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Folistic Haploturbels

Dominant Parent Material: Organic material over loamy cryoturbate

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 8 17 31

pH: Low RV High
 3.4 5.5 6.6

Effective CEC (me/100g): Low High
 14.6 35.8


CEC (me/100g): Min RV Max
 4.8 23.9 62

Organic Matter (percent): Low RV High
 1 27.7 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 1 1.45

Plant Community Phases

| | | | |
|--|--|-------------|-----------|
| Ecological Site Description ID: | R231XY114AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This alpine ecological site is on footslopes and/or toeslopes of mountains (<15% slopes). Cryoturbation resulted in patterned ground features known as turf hummocks. Hummocks range in size, but they are as much as 15 feet in diameter. Two plant communities associated with turf hummocks were observed. They are referred to as a hummocks community (community 1.1) and a moist depressions community (community 1.1m). Pooled water is common in the moist depressions. The soils in community phase 1.1 are classified as Haploturbels and are composed of organic matter over loamy cryoturbate. Disturbances resulting in other community phases were not observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div style="border: 1px solid black; padding: 10px;"> <p>1. Reference State Alpine dwarf scrub-lichen mosaic peat frozen hummock R231XY114AK</p> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>1.1 (HCPC)</p> <p>scrub birch-mixed dwarf scrub-lichen scrubland</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>1.1 m (HCPCM)</p> <p>Willow-mixed dwarf scrub-sedge scrubland</p> </div> </div> </div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>For the climax phases, the hummocks communities are a mixture of shrubs and graminoids and the moist depressions communities are primarily graminoids.</p> <p>The height of low shrubs is defined as 8 inches to 3 feet, and the height of dwarf scrubs is defined as less than 8 inches. The turf hummocks are convex and are better drained than the concave depressions. These differences in microrelief and moisture likely resulted in the different plant communities.</p> | | |

| | | | |
|--|--|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Scrub birch-mixed dwarf scrub-lichen scrubland |
| Community Phase Narrative: | | | |
| <p>The hummocks tended to have a more abundant cover of low and dwarf shrubs, moss, and lichen than the moist depressions. The most abundant low shrub is <i>Betula glandulosa</i>, and the most abundant dwarf scrubs are <i>Betula nana</i> and <i>Vaccinium uliginosum</i>. Graminoids are less dominant on the hummocks than in the moist depression, and a common species is <i>Carex bigelowii</i>. Forbs are a minor vegetative component. Lichen and moss cover are equally distributed on the hummocks. The diversity of lichen is high (12 species), but the abundance of individual species is limited.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No pathway observed. | | |

| | | | |
|--|-----------------------------|-----------------------|--|
| Phase 1.1 m | See above. | | |
| Community Phase Number: | 1.1m | Community Phase Name: | Willow-mixed dwarf scrub-sedge scrubland |
| Community Phase Narrative: | | | |
| The moist depressions have a more abundant graminoid cover and less shrub and lichen cover than the hummocks. Sedges make up most of the graminoid cover, and common species include <i>Carex bigelowii</i> , <i>Eriophorum vaginatum</i> , and <i>Carex membranacea</i> . Shrubs are common and are primarily in the low and dwarf strata. Common shrubs are <i>Salix</i> sp. Forbs and lichen are minor vegetative components. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | No pathway observed. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase HCPC



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
-3 38 78

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
15 25 31

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.3 4 4.7

Subsurface Layer

Thickness (cm): Min RV Max
-18 13 47

Texture: Silt loam, muck

AWC (cm/cm): Min RV Max
0.24 0.29 0.4

pH: Min RV Max
4.9 5.4 5.9

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 15-40 | 30-70 | 5-45 | 0-2 | 0-8 | 0-1 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-20 | --- | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-5 | --- |
| SL (8-36 inches) | --- | --- | 10-7 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—D (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAB15 | <i>Carex bigelowii</i> | 30-30-30 | 25 | 27.4 |
| CAREX | <i>Carex</i> | 25-25-25 | 25 | 25.0 |
| POPO9 | <i>Poa porsildii</i> | 4-4-4 | 25 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| CAREX | <i>Carex</i> | 10-15-20 | 50 | 27.4 |
| CABI5 | <i>Carex bigelowii</i> | 10-15-20 | 50 | 27.4 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 15-15-15 | 25 | 19.4 |
| POARA2 | <i>Poa arctica</i> ssp. <i>arctica</i> | 10-10-10 | 25 | 15.8 |
| FEBR | <i>Festuca brachyphylla</i> | 10-10-10 | 25 | 15.8 |
| JUARA | <i>Juncus arcticus</i> ssp. <i>alaskanus</i> | 5-5-5 | 25 | 11.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| POBI5 | <i>Polygonum bistorta</i> | 1-2-3 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 20-20-20 | 50 | 31.6 |
| BENA | <i>Betula nana</i> | 35-35-35 | 25 | 29.6 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 7-8-10 | 75 | 24.5 |
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 2-11-20 | 50 | 23.5 |
| EMNI | <i>Empetrum nigrum</i> | 2-2.5-3 | 50 | 11.2 |
| DRYAS | <i>Dryas</i> | 5-5-5 | 25 | 11.2 |
| SARE2 | <i>Salix reticulata</i> | 5-5-5 | 25 | 11.2 |
| SAPO | <i>Salix polaris</i> | 5-5-5 | 25 | 11.2 |
| CATE11 | <i>Cassiope tetragona</i> | 5-5-5 | 25 | 11.2 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| B EGL | <i>Betula glandulosa</i> | 5-15-30 | 75 | 33.5 |
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 10-10-10 | 50 | 22.4 |
| SAPU15 | <i>Salix pulchra</i> | 7-8.5-10 | 50 | 20.6 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-6-10 | 50 | 17.3 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Caribou | Summer |

Notable Plants: *Poa porsildii*

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—12-22.5-31

Community Phase HCPCM



Rooting Depth (cm): Min RV Max
 41 50.5 60

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 37 39.5 42

Texture: Mucky peat, peat

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 4.4 5 5.9

Subsurface Layer

Thickness (cm): Min RV Max
 4 11 18

Texture: Muck, silt loam

AWC (cm/cm): None recorded

pH: None recorded

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-8 | 5-30 | 8-75 | 0-2 | 0-17 | 0-7 | 5-70 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 30-5 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-2 | --- |
| SL (8-36 inches) | --- | --- | 1-1 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 10-21.7-30 | 60 | 36.1 |
| CABI5 | <i>Carex bigelowii</i> | 5-16.2-30 | 80 | 36.1 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 30-30-30 | 20 | 24.5 |
| CAME4 | <i>Carex membranacea</i> | 30-30-30 | 20 | 24.5 |
| ERIOP | <i>Eriophorum</i> | 5-7.5-10 | 40 | 17.3 |
| CARO7 | <i>Carex rotundata</i> | 15-15-15 | 20 | 17.3 |
| CAAQ | <i>Carex aquatilis</i> | 10-10-10 | 20 | 14.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 20-20-20 | 20 | 20.0 |
| ERIOP | <i>Eriophorum</i> | 10-10-10 | 20 | 14.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POVI3 | <i>Polygonum viviparum</i> | 4-4.5-5 | 40 | 13.4 |
| POBI5 | <i>Polygonum bistorta</i> | 3-4.5-6 | 40 | 13.4 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAXIF | <i>Saxifraga</i> | 5-5-5 | 20 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 0.1-4.4-8 | 60 | 16.2 |
| CATE11 | <i>Cassiope tetragona</i> | 5-6-7 | 40 | 15.5 |
| SARE2 | <i>Salix reticulata</i> | 5-6-7 | 40 | 15.5 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-3.7-8 | 60 | 14.8 |
| ANPO | <i>Andromeda polifolia</i> | 2-5-8 | 40 | 14.1 |
| DROC | <i>Dryas octopetala</i> | 8-8-8 | 20 | 12.6 |
| EMNI | <i>Empetrum nigrum</i> | 0.1-3.6-7 | 40 | 11.9 |
| LOPR | <i>Loiseleuria procumbens</i> | 7-7-7 | 20 | 11.8 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 2-3-4 | 40 | 11.0 |
| B EGL | <i>Betula glandulosa</i> | 6-6-6 | 20 | 11.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| SALIX | <i>Salix</i> | 5-13.3-25 | 60 | 28.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-3-5 | 40 | 11.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: *Stellaria alaskana*

Species Richness: Number of stops—5; plant species per stop (min-avg-max)—10-15.6-23

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Alpine Lichen Loamy Polygon

Ecological Classification ID: R231XY115AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Polygons on rounded mountains

Slope (percent): Min Max

1 10

Elevation (feet): Min Max

2,625 3,937

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

2 40

Flooding: None

Ponding: None

Runoff: Low

Frost-Free Days: Min Max

20 110

Mean Annual Precipitation (inches): Low High

19 21

Mean Annual Air Temperature (°F): Low High

27 28

Monthly Data:

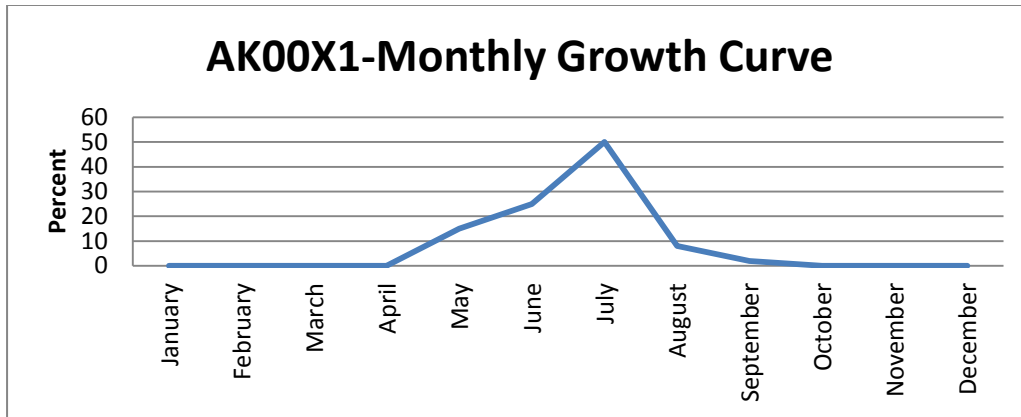
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -26 | 5 |
| February | 0 | 2 | -26 | 14 |
| March | 0 | 2 | -17 | 25 |
| April | 0 | 1 | 0 | 45 |
| May | 0 | 3 | 21 | 59 |
| June | 1 | 7 | 32 | 68 |
| July | 2 | 5 | 36 | 72 |
| August | 2 | 6 | 32 | 66 |
| September | 1 | 5 | 19 | 50 |
| October | 1 | 4 | 1 | 28 |
| November | 1 | 4 | -15 | 14 |
| December | 1 | 3 | -24 | 10 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31SD1—D31-Alpine tussock-scrub silty polygons, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-silty, mixed, superactive, acid, subgelic Typic Histoturbels

Dominant Parent Material: Organic material over loamy cryoturbate

Representative Surface Texture: Peat

Subsurface Texture Group: Coarse-silty

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 15 30 53

pH: Low RV High
 3.4 5.4 6.2

Effective CEC (me/100g): Low High
 12.5 32


CEC (me/100g): Min RV Max
 5.8 30.9 62


Organic Matter (percent): Low RV High
 2 29.3 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 0.8 1.15

Plant Community Phases

| | | | |
|--|--|-------------|-----------|
| Ecological Site Description ID: | | R231XY115AK | |
| Ecological Dynamics of the Site: | | | |
| <p>This alpine ecological site generally is on the summits and shoulders of mountains (<10% slopes). Cryoturbation resulted in patterned ground features known as polygons. The polygons have two associated climax plant communities, and the vegetation likely is dependent on the degree of soil saturation. The two plant communities are polygon face (communities 1.1 and 1.2) and moist interspace. The soils associated with the moist interspace plant community are wetter than those associated with the polygon face plant community. The soils in community phase 1.1 are classified as Histoturbels and are composed of organic matter over loamy cryoturbate. The polygon face plant community is described in this report, and the moist interspace is described in the report for site R231XY102AK. Fire is a documented disturbance resulting in one additional observed phase.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div><div>Alpine lichen loamy frozen polygon</div><div>R231XY115AK</div></div><div><div><div>1.1 (HCPC) Lichen herbaceous community</div><div>1.1a</div><div>1.2 (2FE) Sedge-ericaceous scrub scrubland</div><div>1.2a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | For the climax phase, the dominant vegetation is lichen. The soils associated with the polygon face community are drier than those associated with the moist interspace community. | | |

| | | | |
|---|---|-----------------------|-----------------------------|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Lichen herbaceous community |
| Community Phase Narrative: | | | |
| <p>This community is covered extensively by an assortment of lichen species, resulting in a creamy white appearance. The lichen cover generally is more than 60%, and the most common species is <i>Flavocetraria cucullata</i>. Shrubs, graminoids, forbs, and moss are minor components. As compared to the early fire phase, a relatively low abundance of shrubs and graminoids is present.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | <p>Fire. A lack of exposed mineral soil in recently burned areas is indicative of a low-intensity fire regime for this ecological site.</p> | | |

| | | | |
|--|--|-----------------------|----------------------------------|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Sedge-ericaceous scrub scrubland |
| Community Phase Narrative: | | | |
| <p>As compared to the unburned community, this early fire sere has less lichen cover and more shrub and graminoid cover. A common low shrub is <i>Ledum palustre</i>, and a common dwarf shrub is <i>Vaccinium vitis-idaea</i>. Graminoids are the most abundant vegetation, totaling about 60% cover, and are primarily <i>Carex sp.</i> and <i>Eriophorum sp.</i> Lichen is present in this burn sere, but their abundance likely decreases as a result of fire. Fire produces channelized patterns across the surface of the polygon face, which could be the result of a low-intensity burn.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | With time and no fire. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
31 31 31

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
28 28 28

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.8 3.8 3.8

Subsurface Layer

Thickness (cm): Min RV Max
3 3 3

Texture: Permanently frozen silt loam

AWC (cm/cm): Min RV Max
0.23 0.24 0.24

pH: Min RV Max
4.8 4.8 4.8

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 25-40 | 25-60 | 2-15 | 0-2 | 1-2 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-25 | --- | --- | --- |
| FD (<4 inches) | --- | 10-10 | --- | --- |
| SD (<8 inches) | --- | --- | 10-8 | --- |
| SL (8-36 inches) | --- | --- | 10-5 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| ERIOP | <i>Eriophorum</i> | 15-21.7-25 | 100 | 46.5 |
| CAREX | <i>Carex</i> | 25-25-25 | 67 | 40.8 |
| FEAL | <i>Festuca altaica</i> | 5-8.3-10 | 100 | 28.9 |
| LUZUL | <i>Luzula</i> | 10-10-10 | 67 | 25.8 |
| ARLA2 | <i>Arctagrostis latifolia</i> | 15-15-15 | 33 | 22.4 |
| HIAL3 | <i>Hierochloa alpina</i> | 5-5-5 | 33 | 12.9 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| LYCOP2 | <i>Lycopodium</i> | 5-7.5-10 | 67 | 22.4 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-8.3-10 | 100 | 28.9 |
| ANPO | <i>Andromeda polifolia</i> | 2-5-8 | 67 | 18.3 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 1-2.7-5 | 100 | 16.3 |
| RUCH | <i>Rubus chamaemorus</i> | 2-2-2 | 67 | 11.5 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 10-11.7-15 | 100 | 34.2 |
| B EGL | <i>Betula glandulosa</i> | 15-15-15 | 33 | 22.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-5-5 | 33 | 12.9 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—14-16.3-19

Community Phase HCPC



| <u>Rooting Depth (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|----------------------------|------------|-----------|------------|
| | 47 | 47 | 47 |

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

| <u>Thickness (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------------------|------------|-----------|------------|
| | 30 | 30 | 30 |

Texture: Peat

| <u>AWC (cm/cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|---------------------|------------|-----------|------------|
| | 0.35 | 0.35 | 0.35 |

| <u>pH:</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------|------------|-----------|------------|
| | 3.8 | 3.8 | 3.8 |

Subsurface Layer

| <u>Thickness (cm):</u> | <u>Min</u> | <u>RV</u> | <u>Max</u> |
|------------------------|------------|-----------|------------|
| | 17 | 17 | 17 |

Texture: Permanently frozen silt loam

AWC (cm/cm): Not measured

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

pH: Not measured

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 60-90 | 5-25 | 5-10 | 0-1 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 4-4 | --- | --- | --- |
| SD (<8 inches) | --- | --- | 1-3 | --- |
| SL (8-36 inches) | --- | --- | 2-5 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 7-7-7 | 50 | 18.7 |
| ERIOP | <i>Eriophorum</i> | 4-4-4 | 50 | 14.1 |
| CAREX | <i>Carex</i> | 4-4-4 | 50 | 14.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-2-3 | 100 | 14.1 |
| RUCH | <i>Rubus chamaemorus</i> | 4-4-4 | 50 | 14.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 2-3.5-5 | 100 | 18.7 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-2.5-3 | 100 | 15.8 |
| B EGL | <i>Betula glandulosa</i> | 5-5-5 | 50 | 15.8 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|--------------------|--------------------------|---------------------------|---------------|
| No observed use | | | |
| Not grazed/browsed | | | |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—12-14.5-17

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Alpine Dwarf Scrub-Graminoid Mosaic Organic Frozen Mound

Ecological Classification ID: R231XY116AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Rounded mountains, solifluction lobes on rounded mountains

Slope (percent): Min Max

5 25

Elevation (feet): Min Max

2,625 3,937

Range of Aspect Direction: Southwest to northeast (clockwise)

Water Table Depth (cm): Min Max

2 40

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max

20 110

Mean Annual Precipitation (inches): Low High

15 32

Mean Annual Air Temperature (°F): Low High

19 28

Monthly Data:

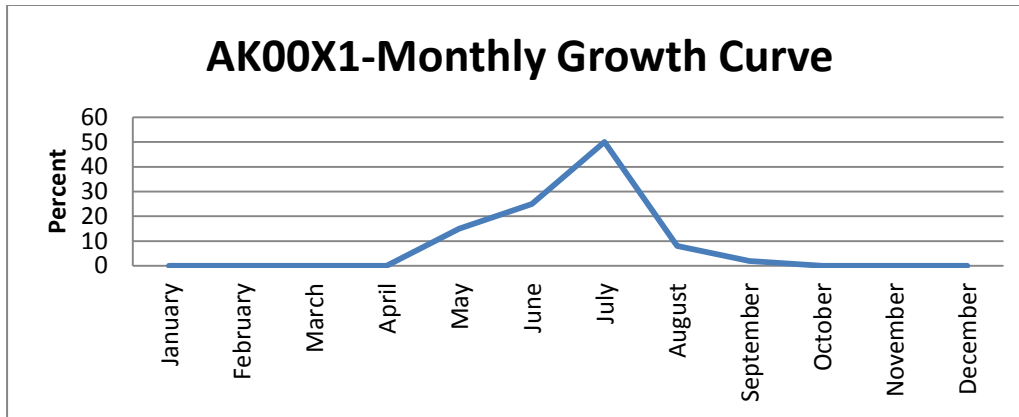
| <u>Month</u> | <u>Precipitation (in)</u> | <u>Precipitation (in)</u> | <u>Temperature (°F)</u> | <u>Temperature (°F)</u> |
|--------------|---------------------------|---------------------------|-------------------------|-------------------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -26 | 5 |
| February | 0 | 2 | -26 | 14 |
| March | 0 | 2 | -17 | 25 |
| April | 0 | 1 | 0 | 45 |
| May | 0 | 3 | 21 | 59 |
| June | 1 | 7 | 32 | 68 |
| July | 2 | 5 | 36 | 72 |
| August | 2 | 6 | 32 | 66 |
| September | 1 | 5 | 19 | 50 |
| October | 1 | 4 | 1 | 28 |
| November | 1 | 4 | -15 | 14 |
| December | 1 | 3 | -24 | 10 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31MT3—D31-Alpine low scrub organic hummocks, frozen

D31SD1—D31-Alpine low scrub organic hummocks, frozen

Characteristics of Representative Soil Components

Soil Classification: Loamy, mixed, euic, subgelic Terric Fibristsels

Dominant Parent Material: Organic material over loamy colluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 15 27 46

pH: Low RV High
 4.1 5.8 6.8

Effective CEC (me/100g): Low High
 26.1 47.3


CEC (me/100g): Min RV Max
 12 34.5 57


Organic Matter (percent): Low RV High
 2 41 80


Bulk Density (1/3-Bar): Min RV Max
 0.36 0.8 1.21

Plant Community Phases

| | | | |
|--|---|-------------|-----------|
| Ecological Site Description ID: | | R231XY116AK | |
| Ecological Dynamics of the Site: | | | |
| <p>This alpine ecological site is on the steeper backslopes of mountains (>10% slopes). Cryoturbation resulted in patterned ground features known as solifluction lobes. The soils in community phase 1.1 are classified as Fibristels and are composed of organic matter over loamy cryoturbate. Some lobes are distinct, and others are indistinct. The distinct lobes are identified by scalloped terrain. Two plant communities are associated with solifluction lobes, occurring separately on interlobes and lobe fronts. The lobe fronts (community 1.1d) are the steep faces on the downhill side of the solifluction lobe, and the interlobes (community 1.1) are the large, relatively smooth areas between the lobe fronts. Fire resulted in one additional community phase.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div>Alpine dwarf scrub-graminoid mosaic organic frozen mound</div><div>R231XY116AK</div><div><div><div>1.1 (HCPC) Low mixed scrub-sedge-<i>Sphagnum</i> scrubland mosaic</div><div>1.1 d (HCPCD) Scrub birch-willow-ericaceous scrub- feathermoss scrubland mosaic dry</div><div>1.2 (2FE) Mixed ericaceous scrub-sedge scrubland</div><div><div>1.1a</div><div>1.2a</div><div>1.1a</div><div>1.2a</div></div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>For the climax phase, the interlobe vegetation is dominantly a mixture of low shrubs and graminoids and the lobe front vegetation is a mixture of medium shrubs and moss.</p> <p>The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches. The gently sloping areas associated with the interlobes have limited drainage and moister soils than the areas associated with the lobe fronts.</p> | | |

| | | | |
|--|--|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Low mixed scrub-sedge-Sphagnum scrubland mosaic |
| Community Phase Narrative: | | | |
| <p>Shrubs and graminoids are abundant components of the vegetation (commonly >50% cover). Shrubs are primarily in the low and dwarf strata. Common low shrubs are <i>Ledum palustre</i> and <i>Salix pulchra</i>, and common dwarf shrubs are <i>Betula nana</i>, <i>Vaccinium vitis-idaea</i>, and <i>Empetrum nigrum</i>. Most of the graminoid cover is sedges, and common species are <i>Carex bigelowii</i> and <i>Eriophorum vaginatum</i>. Sphagnum moss species are abundant in the ground cover.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Fire. | | |

| | | | |
|--|---|-----------------------|--|
| Phase 1.1d |  | | |
| Community Phase Number: | 1.1d | Community Phase Name: | Scrub birch-willow-ericaceous scrub-feathermoss scrubland mosaic dry |
| Community Phase Narrative: | | | |
| <p>Shrubs are an abundant component of the vegetation (>100% cover), and they are in the medium, low, and dwarf strata. A common medium shrub is <i>Betula glandulosa</i>, common low shrubs are <i>Salix pulchra</i> and <i>Vaccinium uliginosum</i>, and common dwarf shrubs are <i>Ledum palustre</i> and <i>Rubus chamaemorus</i>. Graminoid cover is nearly half that of the interlobe communities, and it is a mixture of grass and sedge species such as <i>Calamagrostis canadensis</i> and <i>Carex bigelowii</i>. Forbs and lichen are minor components of the vegetative community. Feathermoss species, such as <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i>, are an abundant component of the ground cover.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Fire. It is unclear if the fire regime differs between community phases 1.1 and 1.1d. | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Mixed ericaceous scrub-sedge scrubland |
| Community Phase Narrative: | | | |
| <p>The vegetation in this early fire phase is similar to that of the unburned interspace community (community 1.1), but dwarf scrub and Sphagnum moss are not present in the early fire phase. The overall scrub and feathermoss cover is lower in this early fire phase than in the unburned lobe front community (community 1.1d). Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Time without fire and normal growth. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
 31 57 83

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
 31 49.5 68

Texture: Peat

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 4 4.4 4.8

Subsurface Layer

Thickness (cm): Min RV Max
 0 7.5 15

Texture: Permanently frozen silt loam, highly organic silt loam, silt loam, gravelly sandy loam

AWC (cm/cm): Min RV Max
 0.12 0.22 0.35

pH: Min RV Max
 5.2 5.5 5.9

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-45 | 10-35 | 10-15 | 0-7 | 2-10 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-7 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-0.1 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-3 | --- |
| SL (8-36 inches) | --- | --- | 1-8 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-0.1 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 40-40-40 | 33 | 36.5 |
| CABI5 | <i>Carex bigelowii</i> | 7-11-15 | 67 | 27.1 |
| ERIOP | <i>Eriophorum</i> | 20-20-20 | 33 | 25.8 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 2-8.5-15 | 67 | 23.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| LYCOP2 | <i>Lycopodium</i> | 5-5-5 | 33 | 12.9 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-4.7-10 | 100 | 21.6 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 1-2-3 | 100 | 14.1 |
| EMNI | <i>Empetrum nigrum</i> | 1-2-3 | 67 | 11.5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------------------|---------------------------------|------------------|-----------------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 15-20-25 | 100 | 44.7 |
| BENA | <i>Betula nana</i> | 8-9-10 | 67 | 24.5 |
| VAUL | <i>Vaccinium uliginosum</i> | 3-4.3-5 | 100 | 20.8 |
| B EGL | <i>Betula glandulosa</i> | 1-2.3-5 | 100 | 15.3 |
| SALIX | <i>Salix</i> | 5-5-5 | 33 | 12.9 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—19-19.3-20

Community Phase HCPC



Rooting Depth (cm): Min RV Max
22 57.8 82

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Surface Layer

Thickness (cm): Min RV Max
13 34 49

Texture: Slightly decomposed plant material, peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.3 4 5

Subsurface Layer

Thickness (cm): Min RV Max
9 23.8 33

Texture: Gravelly sandy loam, highly organic silt loam, silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.12 0.22 0.35

pH: Min RV Max
5.2 5.5 5.9

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-40 | 27-65 | 15-69 | 0-2 | 0-0 | 0-0 | 0-1 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 25-25 | --- | --- | --- |
| FD (<4 inches) | --- | 1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.01-0.01 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-3 | --- |
| SL (8-36 inches) | --- | --- | 10-7 | --- |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 10-27-60 | 83 | 47.4 |
| CABI5 | <i>Carex bigelowii</i> | 25-32.5-40 | 67 | 46.5 |
| CAPO | <i>Carex podocarpa</i> | 20-35-50 | 33 | 34.2 |
| ERBR6 | <i>Eriophorum brachyantherum</i> | 10-10-10 | 17 | 12.9 |
| CAREX | <i>Carex</i> | 5-5-5 | 17 | 9.1 |
| CAAQ | <i>Carex aquatilis</i> | 5-5-5 | 17 | 9.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 10-10-10 | 17 | 12.9 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 5-5-5 | 17 | 9.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 2-6.7-15 | 100 | 25.8 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-5-10 | 83 | 20.4 |
| BENA | <i>Betula nana</i> | 25-25-25 | 17 | 20.4 |
| SABE2 | <i>Salix bebbiana</i> | 15-15-15 | 17 | 15.8 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-7.5-10 | 33 | 15.8 |
| RUCH | <i>Rubus chamaemorus</i> | 1-3.5-5 | 67 | 15.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 10-10-10 | 17 | 12.9 |
| ANPO | <i>Andromeda polifolia</i> | 0-1-3 | 83 | 9.2 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 4-14.8-20 | 67 | 31.4 |
| SAPU15 | <i>Salix pulchra</i> | 10-20-30 | 33 | 25.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-7-10 | 83 | 24.2 |
| B EGL | <i>Betula glandulosa</i> | 5-9-15 | 50 | 21.2 |
| BENA | <i>Betula nana</i> | 2-4.5-7 | 33 | 12.2 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-5-5 | 17 | 9.1 |

Site Tree Measurements: Not measured

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 0-0-0 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Caribou | Spring |

Notable Plants: None observed

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—19-22.5-30

Community Phase HCPCD



Rooting Depth (cm): Min RV Max
37 73 109

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
16 49 82

Texture: Peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.3 3.6 3.9

Subsurface Layer

Thickness (cm): Min RV Max
21 24 27

Texture: Very stony silt loam

AWC (cm/cm): Min RV Max
0.17 0.2 0.23

pH: Min RV Max
5.5 5.5 5.5

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-5 | 0-83 | 0-0 | 0-10 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-3 | --- | --- | --- |
| FD (<4 inches) | --- | 2-5 | --- | --- |
| FM (4-24 inches) | --- | 0.01-5 | --- | --- |
| SD (<8 inches) | --- | --- | 2-5 | --- |
| SL (8-36 inches) | --- | --- | 25-5 | --- |
| SM (3-10 feet) | --- | --- | 40-40 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 15-15-15 | 50 | 27.4 |
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 50 | 27.4 |
| CAPO | <i>Carex podocarpa</i> | 10-10-10 | 50 | 22.4 |
| CARO7 | <i>Carex rotundata</i> | 3-3-3 | 50 | 12.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 5-5-5 | 50 | 15.8 |
| SANE3 | <i>Saxifraga nelsoniana</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 10-10-10 | 50 | 22.4 |
| ANNA | <i>Anemone narcissiflora</i> | 5-5-5 | 50 | 15.8 |
| DOFR | <i>Dodecatheon frigidum</i> | 3-3-3 | 50 | 12.2 |
| POVI3 | <i>Polygonum viviparum</i> | 0-1-2 | 100 | 10.0 |
| ARARA2 | <i>Artemisia arctica</i> ssp. <i>arctica</i> | 2-2-2 | 50 | 10.0 |
| SOMU | <i>Solidago multiradiata</i> | 2-2-2 | 50 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------------------|---------------------------------|------------------|-----------------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 30-30-30 | 50 | 38.7 |
| RUCH | <i>Rubus chamaemorus</i> | 2-11-20 | 100 | 33.2 |
| EMNI | <i>Empetrum nigrum</i> | 5-10-15 | 100 | 31.6 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-3.5-5 | 100 | 18.7 |
| SARE2 | <i>Salix reticulata</i> | 3-3-3 | 50 | 12.2 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------------------|---------------------------------|------------------|-----------------------------------|
| B EGL | <i>Betula glandulosa</i> | 40-40-40 | 50 | 44.7 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-17.5-30 | 100 | 41.8 |
| SAPU15 | <i>Salix pulchra</i> | 25-25-25 | 50 | 35.4 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-5-5 | 50 | 15.8 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------|---------------------------------|------------------|-----------------------------------|
| B EGL | <i>Betula glandulosa</i> | 40-40-40 | 50 | 44.7 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Caribou | Spring |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—17-22.5-28

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Lichen Rock Outcrops Slopes

Ecological Classification ID: R231XY120AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Escarpments

Slope (percent): Min Max
0 100

Elevation (feet): Min Max
492 2,789

Range of Aspect Direction: Northwest to east (clockwise), southeast to northwest (clockwise)

Water Table Depth (cm): Not recorded

Flooding: None

Ponding: None

Runoff: Very high

Frost-Free Days: Min Max
20 110

Mean Annual Precipitation (inches): Low High
10 20

Mean Annual Air Temperature (°F): Low High
23 27

Monthly Data:

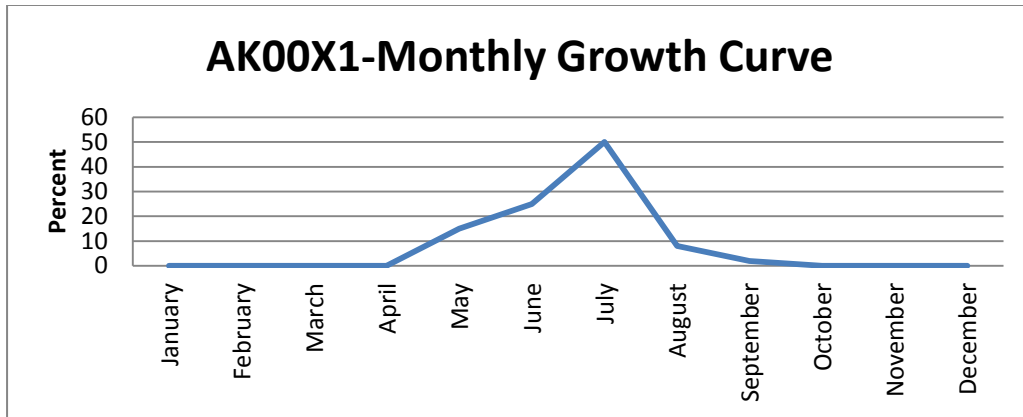
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Features

MLRA Map Unit Symbols and Components (Soil Names):

D31BH2—D31-Boreal bedrock
D31BH6—D31-Boreal rubble land

Characteristics of Representative Components

Dominant Parent Material: Gravelly colluvium over residuum, residuum

Representative Surface Texture: Bedrock

Subsurface Texture Group: Not applicable

Saturated Hydraulic Conductivity: Low to high

AWC Total (cm): Low RV High
 1 1 2

pH: Low RV High
 5.5 6.2 6.8

Effective CEC (me/100g): Low High
 4 4


CEC (me/100g): Min RV Max
 5 5 5

Organic Matter (percent): Low RV High
 0 0.3 1

Bulk Density (1/3-Bar): Min RV Max
 1.47 1.5 1.47

Plant Community Phases

| | | | |
|--|---|-------------|-----------|
| Ecological Site Description ID: | R231XY120AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is on bedrock outcroppings and scree fields. The dominant plants are crustose and foliose lichen that cover exposed rock. Trace amounts of vascular and nonvascular plants grow in small cracks and crevasses. The soils in community phase 1.1 are classified as Cryorthents and are composed of gravelly residuum. Disturbances resulting in other plant community phases were not observed. No alternate states were observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div style="border: 1px solid black; padding: 10px;"> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: left;">1. Reference State</div> <div style="text-align: center;">Boreal lichen rock outcrops slopes</div> <div style="text-align: right;">R231XY120AK</div> </div> <div style="margin-top: 20px; text-align: center;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> 1.1 (HCPC) Lichen-bare ground herbaceous community </div> </div> </div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | Vegetation is similar on the outcroppings and scree fields. It is dominantly an assortment of lichen species. | | |

| | | | |
|--|--|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Lichen-bare ground herbaceous community |
| Community Phase Narrative: | | | |
| Crustose and foliose lichen are the most abundant types of vegetation, commonly covering >50% of the rock in scree fields and/or outcroppings. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No observed pathway. | | |

Dynamic Properties within Representative Rooting Depth

Community Phase HCPC



Rooting Depth (cm): Min RV Max
1 1 1

Restrictive Feature: Lithic bedrock

Drainage Class: Excessively drained

Surface Layer

Thickness (cm): Min RV Max
0 0 0

Texture: Gravelly sandy loam, channers

AWC (cm/cm): Min RV Max
0.11 0.11 0.11

pH: Min RV Max
7.5 7.5 7.5

Subsurface Layer

Thickness (cm): Min RV Max
1 1 1

Texture: Bedrock

AWC (cm/cm): Not recorded

pH: Not recorded

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-50 | 0-40 | 0-5 | 0-1 | 0-5 | 0-99 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-2 | --- | --- | --- |
| FM (4-24 inches) | --- | 1-2 | --- | --- |
| SL (8-36 inches) | --- | --- | 5-5 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| CAPU | <i>Calamagrostis purpurascens</i> | 1-4.7-10 | 38 | 13.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| POTEN | <i>Potentilla</i> | 25-25-25 | 13 | 17.7 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—8; plant species per stop (min-avg-max)—4-6.8-9

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Gravelly Floodplain, Non-Vegetated

Ecological Classification ID: R231XY126AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Very low flood plains

Slope (percent): Min Max

0 5

Elevation (feet): Min Max

492 2,034

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

0 0

Flooding: Frequency Duration

Frequent Long

Ponding: None

Runoff: Low

Frost-Free Days: Min Max

50 110

Mean Annual Precipitation (inches): Low High

9 21

Mean Annual Air Temperature (°F): Low High

23 28

Monthly Data:

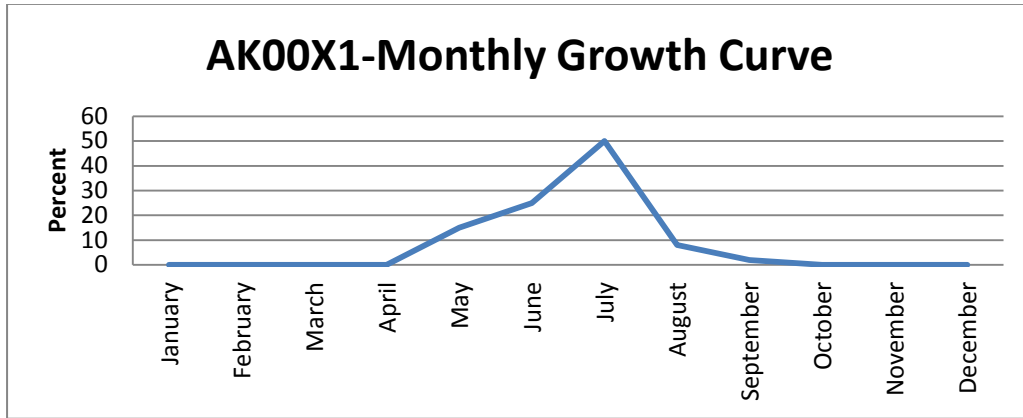
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Features

MLRA Map Unit Symbols and Components (Soil Names):

D31UC4—D31-Boreal riverwash

D31YV1—D31-Boreal riverwash

D31YV8—D31-Boreal riverwash

Characteristics of Representative Components

Dominant Parent Material: Sandy and gravelly alluvium

Representative Surface Texture: Stratified extremely gravelly coarse sand to gravelly sandy loam

Subsurface Texture Group: Not applicable

Saturated Hydraulic Conductivity: High

AWC Total (cm): Low RV High
3 5 6

pH: Low RV High
6.4 7.5 8.2

Effective CEC (me/100g): Low High
4 4


CEC (me/100g): Min RV Max
10 10 10

Organic Matter (percent): Low RV High
0.9 0.9 0.9

Bulk Density (1/3-Bar): Min RV Max
1.56 1.6 1.57

Plant Community Phases

| | | | |
|--|---|-------------|-----------|
| Ecological Site Description ID: | R231XY126AK | | |
| Ecological Dynamics of the Site: | | | |
| This boreal ecological site is on alluvial bars directly adjacent to rivers that are subject to intense and frequent flooding. This ecological site is directly adjacent to the Yukon River and many of its secondary tributaries. The majority of the site has minimal vegetation and an abundance of exposed soil and gravel. The soils in community phase 1.1 are classified as Cryorthents and are composed of sandy and/or gravelly alluvium. | | | |
| State and Transition Diagram: | | | |
| <div style="border: 1px solid black; padding: 10px; margin: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> 1.0 Reference State Boreal gravelly floodplain non-vegetated R231XY126AK </div> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <div style="text-align: center;"> <p>1.1 (HCPC)</p> <p>Willow-mixed forb herbaceous community</p> </div> </div> </div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches. | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Willow-Mixed Forb Herbaceous Community |
| Community Phase Narrative: | | | |
| <p>The total vegetative cover is ~10% on alluvial bars and is primarily composed of a mixture of willow and forb species. Scrubs primarily are in the low and dwarf strata (total cover ~5%), and common species include <i>Salix interior</i> and <i>Salix alaxensis</i>. Forb cover is minimal (~5%), but the diversity of the species is high (commonly >10 species per plot). Common forbs include <i>Chamerion latifolium</i>, <i>Equisetum pratense</i>, <i>Eurybia sibirica</i>, <i>Artemisia tilesii</i>, <i>Achillea millefolium</i>, and <i>Hedysarum alpinum</i>.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No observed pathway. | | |

Dynamic Properties within Representative Rooting Depth
Community Phase HCPC



Rooting Depth (cm): Min RV Max
 5 27.4 50

Restrictive Features: None recorded

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 0 0 0

Texture: Extremely bouldery coarse sand, extremely gravelly coarse sand, extremely gravelly coarse sandy loam, extremely gravelly fine sandy loam, extremely gravelly loamy sand, extremely gravelly sand, loamy sand

AWC (cm/cm): Min RV Max
 0.01 0.03 0.08

pH: Min RV Max
 6.5 7.4 8

Subsurface Layer

Thickness (cm): Min RV Max
 5 27.4 50

Texture: Extremely gravelly coarse sand, extremely gravelly loamy sand, extremely gravelly sand

AWC (cm/cm): Min RV Max
 0.02 0.04 0.08

pH: Min RV Max
 6.4 7.3 7.7

Influencing Water Features

NWI Code: R2UB1, R2UB2, R2US2, R2UB3

NWI Description: Riverine, Lower Perennial, Unconsolidated Bottom, Cobble-Gravel; Riverine, Lower Perennial, Unconsolidated Bottom, Sand; Riverine, Lower Perennial, Unconsolidated Shore, Sand; Riverine, Upper Perennial, Unconsolidated Bottom, Mud

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point bars; moderate gradient, riffle-dominant channel with infrequently spaced pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-2 | 0-4 | 0-7 | 0-5 | 5-99 | 1-75 | 0-12 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| SL (8-36 inches) | --- | --- | 2-2 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAAL | <i>Salix alaxensis</i> | 15-15-15 | 11 | 12.9 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAAL | <i>Salix alaxensis</i> | 7-8.5-10 | 22 | 13.7 |
| SAIN3 | <i>Salix interior</i> | 2-3.5-5 | 44 | 12.5 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Other | Spring |
| Slight use | Willows | Moose | Summer |
| Slight use | Willows | Other | Winter |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—9; plant species per stop (min-avg-max)—2-8.6-21

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Alpine and Subalpine Lichen Rock Outcrops Slopes

Ecological Classification ID: R231XY127AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Escarpments, mountains

Slope (percent): Min Max
 25 100

Elevation (feet): Min Max
 3,281 7,546

Range of Aspect Direction: West to southeast (clockwise)

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max
 50 80

Mean Annual Precipitation (inches): Low High
 11 32

Mean Annual Air Temperature (°F): Low High
 19 28

Monthly Data:

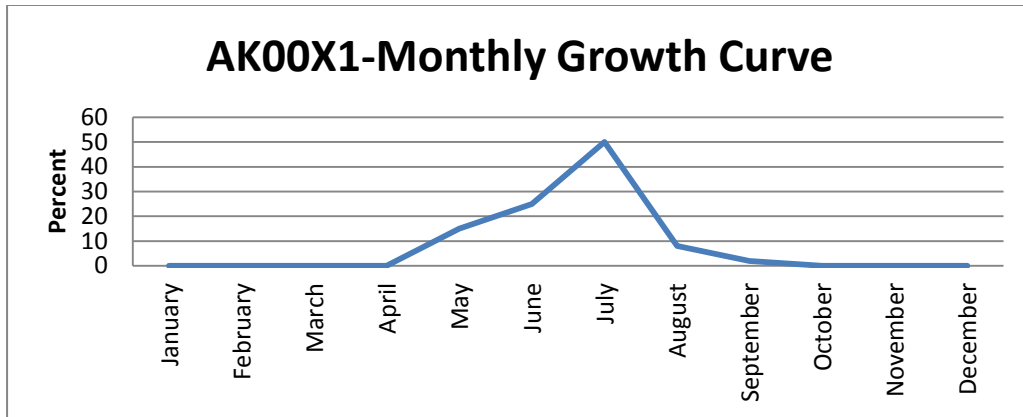
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -26 | 5 |
| February | 0 | 2 | -26 | 14 |
| March | 0 | 2 | -17 | 25 |
| April | 0 | 1 | 0 | 45 |
| May | 0 | 3 | 21 | 59 |
| June | 1 | 7 | 32 | 68 |
| July | 2 | 5 | 36 | 72 |
| August | 2 | 6 | 32 | 66 |
| September | 1 | 5 | 19 | 50 |
| October | 1 | 4 | 1 | 28 |
| November | 1 | 4 | -15 | 14 |
| December | 1 | 3 | -24 | 10 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Features

MLRA Map Unit Symbols and Components (Soil Names):

D31MT1—D31-Alpine rubble land
 D31MT2—D31-Alpine rubble land
 D31OM1—D31-Alpine bedrock
 D31OM1—D31-Alpine rubble land
 D31OM2—D31-Alpine bedrock
 D31SD1—D31-Alpine rubble land

Characteristics of Representative Components

Dominant Parent Material: Gravelly colluvium, residuum

Representative Surface Texture: Bedrock

Subsurface Texture Group: Not applicable

Saturated Hydraulic Conductivity: Moderately low to high

AWC Total (cm): Low RV High
 0 0 15


Effective CEC (me/100g): Low High
 4 4

CEC (me/100g): Min RV Max
 1 1 1

Organic Matter (percent): Low RV High
 1 1 1

Plant Community Phases

| | | | |
|--|--|-------------|-----------|
| Ecological Site Description ID: | R231XY127AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This alpine and/or subalpine ecological site is at high elevations on bedrock outcroppings and in scree fields. The dominant plants are crustose and foliose lichen that cover the exposed rock. Trace amounts of vascular and nonvascular plants grow in small cracks and crevasses. The soils in community phase 1.1 are classified as Gelorthents and are composed of gravelly colluvium. Disturbances resulting in other plant community phases were not observed. No alternate states were observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div style="border: 1px solid black; padding: 10px;"> <div style="display: flex; justify-content: space-between; align-items: flex-start;"> <div style="text-align: left;">1. Reference State</div> <div style="text-align: center;">Alpine lichen rock outcrops slopes</div> <div style="text-align: right;">R231XY127AK</div> </div> <div style="margin-top: 20px; text-align: center;"> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> 1.1 (HCPC) Bare ground-lichen herbaceous community </div> </div> </div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | Vegetation is similar on the outcroppings and in the scree fields. It is dominantly an assortment of lichen species. | | |

| | | | |
|--|-----------------------------|---|---|
| Phase 1.1 | |  | |
| Community Phase Number: | 1.1 | Community Phase Name: | Bare ground-lichen herbaceous community |
| Community Phase Narrative: | | | |
| Crustose and foliose lichen are the most abundant types of vegetation, commonly covering >50% of the rock in the scree fields and/or the outcroppings. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No observed pathway. | | |

Dynamic Properties within Representative Rooting Depth
Community Phase HCPC



Rooting Depth (cm): Min RV Max
 0 92.5 185

Restrictive Features: Densic bedrock, lithic bedrock

Drainage Class: Excessively drained, somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
 0 1 2

Texture: Bedrock, boulders, cobbles, gravel, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 2.9 4.6 7.1

Subsurface Layer

Thickness (cm): Min RV Max
 0 91.5 183

Texture: Boulders, cobbles, gravel

AWC (cm/cm): Not recorded

pH: Not recorded

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-90 | 1-30 | 0-3 | 0-0 | 0-1 | 0-100 | 0-1 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.01-0.01 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-0.1 | --- | --- |
| FM (4-24 inches) | --- | 0.01-0.01 | --- | --- |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Lichen | Dall sheep | Summer |
| Unknown | | | Unknown |

Notable Plants: *Minuartia yukonensis*

Species Richness: Number of stops—19; plant species per stop (min-avg-max)—3-15-27

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Tussock Peat Plains

Ecological Classification ID: R231XY128AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Hills, mountains, plains, terraces

Slope (percent): Min Max

1 20

Elevation (feet): Min Max

1,804 3,445

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

0 25

Flooding: None

Ponding: Frequency Duration

Frequent Very long

Runoff: Medium

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

16 31

Mean Annual Air Temperature (°F): Low High

21 28

Monthly Data:

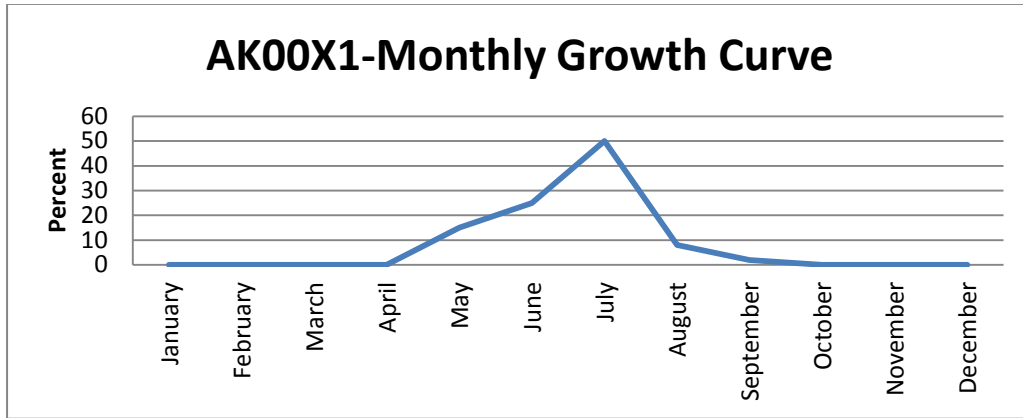
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31UC1—D31-Boreal tussock organic plains, frozen

D31UC3—D31-Boreal tussock organic plains, frozen

Characteristics of Representative Soil Components

Soil Classification: Loamy, mixed, dysic, subgelic Terric Fibristsels

Dominant Parent Material: Organic material over loess over loamy cryoturbate

Representative Surface Texture: Peat

Subsurface Texture Group: Loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
15 35 61

pH: Low RV High
3.4 4.9 6.5

Effective CEC (me/100g): Low High
14.5 40


CEC (me/100g): Min RV Max
10 26.8 62

Organic Matter (percent): Low RV High
2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
0.36 1.1 1.4

Plant Community Phases

| | | | |
|---|-------------|--|--|
| Ecological Site Description ID: | R231XY128AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is in broad, gently sloping areas that are considered plains (slope ranges from 1 to 9%). The soils are wet due to the thick organic mat, shallow depth to permafrost, and gentle slope. Tree growth is limited. The soils in community phase 1.1 are classified as Fibristels and are composed of organic material over loess and/or loamy cryoturbate. As slope increases, the soils support black spruce, which is likely related to the soil drainage. Charcoal is in soil profile; therefore, fire is a disturbance regime. The sites have not burned recently, however, and documentation is available only for the climax phase. No alternate states were observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State </div></div> | | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Mixed ericaceous scrub-cloudberry-cotton grass tussock-Sphagnum moss scrubland |
| Community Phase Narrative: | | | |
| <p>The dominant vegetation is a mixture of tussock-forming sedges, dwarf shrubs, and low shrubs. Stunted and regenerative <i>Picea mariana</i> is present, but the tree cover is a minor vegetative component. The most common low shrubs are <i>Ledum palustre</i> and <i>Betula nana</i>. The most common dwarf shrubs are <i>Rubus chamaemorus</i> and <i>Vaccinium vitis-idaea</i>. Tussock-forming sedges are a dominant component of the vegetation, and the most common species are <i>Eriophorum vaginatum</i> and <i>Carex bigelowii</i>. Forbs and lichen are minor vegetative components. Sphagnum moss is abundant (estimated >40% cover).</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Fire. | | |
| Phase 1.2 | No data. | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Cotton grass tussock-mixed ericaceous scrub-Sphagnum moss herbaceous community |

| Community Phase Narrative: | |
|--|--------------------------------------|
| No data. Phase 1.2 is undocumented, but this phase was observed in the field. As compared to phase 1.1, the scrub cover is less abundant and the cottongrass cover is more abundant. | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Normal time and growth without fire. |

Dynamic Soil Properties within Representative Rooting Depth
Community Phase HCPC



Rooting Depth (cm): Min RV Max
 20 48.1 65

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 20 37.1 45

Texture: Peat, mucky peat

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.2 3.7 4.2

Subsurface Layer

Thickness (cm): Min RV Max
0 11 20

Texture: Gravelly silt loam, permanently frozen silt loam, stony coarse sandy loam, sandy loam, permanently frozen coarse sandy loam

AWC (cm/cm): Min RV Max
0.12 0.17 0.25

pH: Min RV Max
4.5 5.1 5.8

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 0-20 | 25-85 | 10-50 | 0-3 | 0-5 | 0-0 | 0-3 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 20-20 | --- | --- | --- |
| SD (<8 inches) | --- | --- | 10-3 | --- |
| SL (8-36 inches) | --- | --- | 6-6 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-0.1 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|------------------------------|------------------|-------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 12-37.9-60 | 92 | 58.9 |
| CABI5 | <i>Carex bigelowii</i> | 0.1-15.1-35 | 67 | 31.8 |
| CAREX | <i>Carex</i> | 10-10-10 | 8 | 9.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|------------------------------|------------------|-------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 75-75-75 | 8 | 25.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| RUCH | <i>Rubus chamaemorus</i> | 1-7.5-10 | 100 | 27.4 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-12.3-25 | 58 | 26.8 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 1-6.2-20 | 108 | 25.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 3-7.5-15 | 50 | 19.4 |
| BENA | <i>Betula nana</i> | 2-5.7-10 | 25 | 11.9 |
| VAOX | <i>Vaccinium oxycoccos</i> | 0.1-1.3-5 | 83 | 10.6 |
| EMNI | <i>Empetrum nigrum</i> | 1-2.8-5 | 33 | 9.6 |
| ANPO | <i>Andromeda polifolia</i> | 0.1-1.2-3 | 75 | 9.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| BENA | <i>Betula nana</i> | 3-8-18 | 75 | 24.5 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-12-20 | 42 | 22.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 3-8-15 | 50 | 20.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|----------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Picea mariana</i> | 44-54-65 | 0.96-1-1.8 | 4-4-5 | 2 | G |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Caribou | Summer |
| Slight use | Grasses and sedges | Caribou | Unknown |
| Unknown | | | Unknown |

Notable Plants: *Pedicularis groenlandica*

Species Richness: Number of stops—12; plant species per stop (min-avg-max)—12-19.5-26

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Subalpine Scrub Loamy Frozen Circles

Ecological Classification ID: R231XY129AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Mountains, nonsorted circles on hills and mountains

Slope (percent): Min Max

5 25

Elevation (feet): Min Max

2,461 4,265

Range of Aspect Direction: South to north (clockwise)

Water Table Depth (cm): Min Max

2 25

Flooding: None

Ponding: None

Runoff: High

Frost-Free Days: Min Max

20 110

Mean Annual Precipitation (inches): Low High

13 32

Mean Annual Air Temperature (°F): Low High

19 28

Monthly Data:

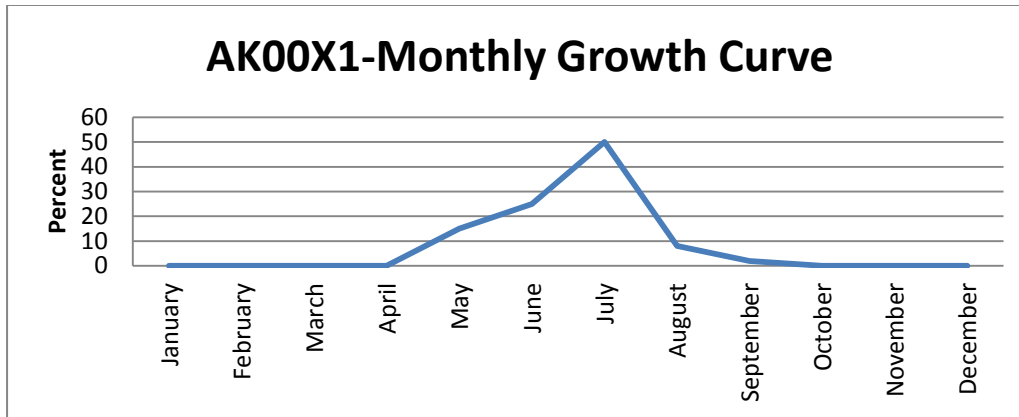
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31SD1—D31-Subalpine scrub loamy colluvial slopes, frozen

D31UC2—D31-Subalpine scrub loamy colluvial slopes, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Typic Histoturbels

Dominant Parent Material: Organic material over loamy cryoturbate

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 9 17 30

pH: Low RV High
 3.5 5.8 6.7

Effective CEC (me/100g): Low High
 17.6 44.7

CEC (me/100g): Min RV Max
 5.6 24.5 62


Organic Matter (percent): Low RV High
 1 27.7 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 0.9 1.23


Plant Community Phases

| | |
|---|-------------|
| Ecological Site Description ID: | R231XY129AK |
| Ecological Dynamics of the Site: | |
| <p>This subalpine ecological site is at high elevations on backslopes of mountains (<25% slopes; 850 to 1,050 meters elevation). Cryoturbation resulted in patterned ground features known as circles. No obvious rock sorting is present. The soils in community phase 1.1 are classified as Histoturbels and are composed of organic matter over loess over loamy cryoturbate. This site is in landscape positions similar to those of site F231XY124AK, but the soils associated with site R231XY129AK have less rock fragments, have permafrost, and generally are moister.</p> <p>Fire resulted in three observed phases. Fire is a natural and typically unmanaged disturbance regime. High- and low-severity fire events occur. Low-severity and high-severity fires appear to cause differences in the depth of the organic material on the soil surface, the presence and/or depth of permafrost, and the present and potential vegetation.</p> | |
| State and Transition Diagram: | |
| <div><div>1. Reference State</div><div>Subalpine scrub loamy frozen circles</div><div>R231XY129AK</div><div><div>1.1 (HCPC) mixed scrub-stunted spruce-moss scrubland</div><div>1.1b</div><div>1.2 (2FL) Scrub birch-mixed ericaceous scrub-sedge-moss scrubland</div><div>1.2b</div><div>1.1a</div><div>1.2a</div><div>1.3 (2FE) Scrub birch-mixed ericaceous scrub-bluejoint-moss scrubland</div><div>1.3a</div></div></div> | |


| | | | |
|-------------------------------|---|-------------|-----------|
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>For the climax phase, the dominant vegetation is a mixture of shrubs in the medium, low, and dwarf strata. The tree cover is sporadic and is in the medium, stunted, and regenerative strata.</p> <p>During a low-severity fire, minimal proportions of the organic mat are consumed and mineral soils typically are not exposed. Permafrost typically remains in the soil profile, and water commonly perches above it. Graminoids and scrubs quickly recolonize and become dominant as a result of below-ground root reserves that were not consumed in the fire event.</p> <p>During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost often drops out of the soil profile, and the sites become drier. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>Graminoids and moss are more prevalent than forbs and lichen. The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches. The height of medium trees is defined as 15 to 40 feet, and the height of stunted and regenerative trees is defined as less than 15 feet.</p> | | |

| | | | |
|-------------------------|--|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Mixed scrub-stunted spruce-moss scrubland |

| Community Phase Narrative: | |
|---|--|
| <p><i>Picea mariana</i> and <i>Picea glauca</i> primarily are in the medium tree stratum, but neither species is abundant (total mature tree cover ~7%). This phase has abundant shrub cover that is evenly distributed among the medium, low, and dwarf shrub strata (total shrub cover ~90% cover). Common shrub species include <i>Betula glandulosa</i>, <i>Salix pulchra</i>, <i>Vaccinium uliginosum</i>, <i>Ledum palustre</i>, <i>Empetrum nigrum</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids are abundant (~25% cover) and are primarily <i>Carex bigelowii</i>. Moss (~50% cover), leaf litter (~35% cover), and lichen (~20% cover) are abundant in the ground cover. The most common moss species are <i>Hylocomium splendens</i>, <i>Pleurozium schreberi</i>, and <i>Sphagnum</i> sp., and the most common lichen species are <i>Cladina</i> and <i>Cladonia</i>. Five observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | High-intensity fire. Fire completely removes the tree canopy and likely reduces the depth of the surface organic matter, exposing mineral soils. |
| 1.1b | Low-intensity fire or spot fire. The soils have a wet, thick organic mat (>15 cm.), which may hinder high-severity fires. It is unclear if this disturbance pathway is typical for this ecological site. A low-intensity or spot fire in the climax phase would likely result in a community resembling a late fire phase community. |

| | | | |
|-------------------------|--|-----------------------|---|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Scrub birch-mixed ericaceous scrub-sedge-moss scrubland |

| Community Phase Narrative: | |
|--|--|
| <p><i>Picea mariana</i> and <i>Picea glauca</i> primarily are in the regenerative tree stratum, but neither species is abundant (~5% cover). This phase has abundant shrub cover that is mainly in the low shrub stratum (~75% total shrub cover). The most common species are <i>Alnus viridis</i>, <i>Betula glandulosa</i>, <i>Vaccinium uliginosum</i>, <i>Ledum palustre</i>, and <i>Rubus chamaemorus</i>. Graminoids are abundant (~15% cover), and the most common species are <i>Eriophorum</i> and <i>Carex sp.</i> Moss (~30% cover) and lichen (~25% cover) are abundant in the ground cover. The most common moss species are <i>Hylocomium splendens</i> and <i>Sphagnum sp.</i>, and the most common lichen is <i>Flavocetraria cucullata</i>. Three observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. |
| 1.2b | Normal time and growth without fire. Overall, late and climax phase plant communities are very similar. The phases were divided in large part due to the size and amount of trees, which could be related to many factors, including elevation. In general, climax phase communities have a higher diversity of forbs and lichen. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.3. |

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Scrub birch-mixed ericaceous scrub-bluejoint-moss scrubland |

| Community Phase Narrative: | |
|---|---|
| <p>The tree canopy is minimal and consists of regenerating <i>Picea mariana</i> (~1% cover). This phase has abundant shrub cover (~180% cover) that is mainly in the medium shrub stratum. The most common species include <i>Betula glandulosa</i>, <i>Vaccinium uliginosum</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids, forbs, and lichen are minor vegetative components. <i>Calamagrostis canadensis</i> is the most common species. Moss (~40% cover) and woody debris (~10% cover) are abundant in the ground cover. The most common species of moss is <i>Polytrichum sp.</i> One observation of this phase was conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.3b | Normal time and growth without fire. Trees become established and the surface organic matter content increases with time since disturbance. |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max

100 100 100

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

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Surface Layer

Thickness (cm): Min RV Max
7 7 7

Texture: Highly decomposed plant material

AWC (cm/cm): Min RV Max
0.4 0.4 0.4

pH: Min RV Max
4.8 4.8 4.8

Subsurface Layer

Thickness (cm): Min RV Max
93 93 93

Texture: Cobbly silt loam, silt loam

AWC (cm/cm): Min RV Max
0.22 0.23 0.25

pH: Min RV Max
4.1 4.7 5.3

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 12-12 | 40-40 | 5-5 | 10-10 | 0-0 | 4-4 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-0.1 | --- | --- | --- |
| GT (>24 inches) | 12-12 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-1 | --- | --- |
| SD (<8 inches) | --- | --- | 50-50 | --- |
| SL (8-36 inches) | --- | --- | 2-4 | --- |
| SM (3-10 feet) | --- | --- | 3-85 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-0.1 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 12-12-12 | 100 | 34.6 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 1-1-1 | 100 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 50-50-50 | 100 | 70.7 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 25-25-25 | 100 | 50.0 |
| LEGR | <i>Ledum groenlandicum</i> | 4-4-4 | 100 | 20.0 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 2-2-2 | 100 | 14.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| B EGL | <i>Betula glandulosa</i> | 85-85-85 | 100 | 92.2 |
| SAPU15 | <i>Salix pulchra</i> | 5-5-5 | 100 | 22.4 |
| BENA | <i>Betula nana</i> | 4-4-4 | 100 | 20.0 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 3-3-3 | 100 | 17.3 |
| SABE2 | <i>Salix bebbiana</i> | 3-3-3 | 100 | 17.3 |

Site Tree Measurements: Not measured

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 0-0-0 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—23-23-23

Community Phase 2FL



Rooting Depth (cm): Min RV Max
48 48 48

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
18 18 18

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.6 3.6 3.6

Subsurface Layer

Thickness (cm): Min RV Max
30 30 30

Texture: Silt loam

AWC (cm/cm): Min RV Max
0.24 0.25 0.25

pH: Min RV Max
5.9 6.1 6.3

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 15-40 | 30-35 | 5-20 | 3-10 | 0-0 | 0-0 | 0-1 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 2-2 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.1-0.1 | --- | --- |
| SD (<8 inches) | --- | --- | 5-5 | --- |
| SL (8-36 inches) | --- | --- | 10-20 | --- |
| SM (3-10 feet) | --- | --- | 15-15 | --- |
| TS (<15 feet) | --- | --- | --- | 2-3 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 20-20-20 | 50 | 31.6 |
| CABI5 | <i>Carex bigelowii</i> | 10-10-10 | 50 | 22.4 |
| CAREX | <i>Carex</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 20-20-20 | 50 | 31.6 |
| RUCH | <i>Rubus chamaemorus</i> | 12-12-12 | 50 | 24.5 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 4-4.5-5 | 100 | 21.2 |
| EMNI | <i>Empetrum nigrum</i> | 8-8-8 | 50 | 20.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| BENA | <i>Betula nana</i> | 10-15-20 | 100 | 38.7 |
| B EGL | <i>Betula glandulosa</i> | 20-20-20 | 50 | 31.6 |
| VAUL | <i>Vaccinium uliginosum</i> | 10-10-10 | 100 | 31.6 |
| LEGR | <i>Ledum groenlandicum</i> | 15-15-15 | 50 | 27.4 |
| SAGL | <i>Salix glauca</i> | 10-10-10 | 50 | 22.4 |
| SAPU15 | <i>Salix pulchra</i> | 2-2-2 | 50 | 10.0 |

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Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 6-10.5-15 | 100 | 32.4 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 3-3-3 | 100 | 17.3 |
| PIGL | <i>Picea glauca</i> | 2-2-2 | 50 | 10.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 40-40-40 | 3-3-3 | 17-17-17 | 1 | G |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 4-4-4 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—21-22-23

Community Phase HCPC



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
26 61.8 97

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
15 18.8 21

Texture: Peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.2 4.8 6.5

Subsurface Layer

Thickness (cm): Min RV Max
11 43 76

Texture: Gravelly silt loam, gravelly sandy loam, permanently frozen silt loam, channery loam, channery silt loam, silt loam, sandy loam, muck

AWC (cm/cm): Min RV Max
0.12 0.22 0.4

pH: Min RV Max
4.9 6.1 7.1

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-40 | 45-60 | 10-70 | 1-5 | 0-2 | 0-1 | 0-3 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | --- | --- | --- | --- |
| FM (4-24 inches) | --- | 1-5 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-5 | --- |
| SL (8-36 inches) | --- | --- | 10-20 | --- |
| TR (<15 feet) | --- | --- | --- | 1-2 |
| TS (<15 feet) | --- | --- | --- | 10-5 |

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Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 15-20-35 | 80 | 40.0 |
| CACA4 | <i>Calamagrostis canadensis</i> | 5-15-25 | 40 | 24.5 |
| POPA2 | <i>Poa palustris</i> | 15-15-15 | 20 | 17.3 |
| CAREX | <i>Carex</i> | 10-10-10 | 20 | 14.1 |
| ERIOP | <i>Eriophorum</i> | 10-10-10 | 20 | 14.1 |
| ERAN6 | <i>Eriophorum angustifolium</i> | 10-10-10 | 20 | 14.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 0.1-2-3 | 60 | 11.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 15-15-15 | 20 | 17.3 |
| POBI5 | <i>Polygonum bistorta</i> | 1-2.7-5 | 60 | 12.6 |
| PEFR5 | <i>Petasites frigidus</i> | 3-3-3 | 40 | 11.0 |
| SAAN3 | <i>Saussurea angustifolia</i> | 5-5-5 | 20 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-8-20 | 100 | 28.3 |
| EMNI | <i>Empetrum nigrum</i> | 2-8-20 | 100 | 28.3 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 1-3-5 | 40 | 11.0 |
| RUCH | <i>Rubus chamaemorus</i> | 1-3-5 | 40 | 11.0 |
| DROC | <i>Dryas octopetala</i> | 5-5-5 | 20 | 10.0 |
| ARRU | <i>Arctostaphylos rubra</i> | 5-5-5 | 20 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium uliginosum</i> | 5-15-25 | 100 | 38.7 |
| BEG | <i>Betula glandulosa</i> | 15-17.5-20 | 40 | 26.5 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 3-11-15 | 60 | 25.7 |
| LEGR | <i>Ledum groenlandicum</i> | 30-30-30 | 20 | 24.5 |
| SAPU15 | <i>Salix pulchra</i> | 5-10-15 | 60 | 24.5 |
| SAGL | <i>Salix glauca</i> | 2-13.5-25 | 40 | 23.2 |
| BENA | <i>Betula nana</i> | 5-7.5-10 | 40 | 17.3 |
| SARI4 | <i>Salix richardsonii</i> | 5-5-5 | 20 | 10.0 |

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Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|-------------------------------------|---------------------------------|------------------|-----------------------------------|
| SAPU15 | <i>Salix pulchra</i> | 10-17.5-25 | 40 | 26.5 |
| BEGL | <i>Betula glandulosa</i> | 10-15-20 | 40 | 24.5 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 20-20-20 | 20 | 20.0 |
| SAGL | <i>Salix glauca</i> | 5-10-15 | 40 | 20.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|---------------------------------|------------------|-----------------------------------|
| PIGL | <i>Picea glauca</i> | 0.1-3-5 | 80 | 15.6 |
| PIMA | <i>Picea mariana</i> | 1-3-5 | 40 | 11.0 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|---------------------------------|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 10-10-10 | 20 | 14.1 |
| PIGL | <i>Picea glauca</i> | 5-5-5 | 40 | 14.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|------------------------|---------------------------------|------------------|-----------------------------------|
| PIMA | <i>Picea mariana</i> | 15-15-15 | 20 | 17.3 |
| PIGL | <i>Picea glauca</i> | 5-6.5-8 | 40 | 16.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> <u>Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------------|
| <i>Picea glauca</i> | 23-48-72 | 1.8-2-2.4 | 6-8-9 | 2 | G |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 5-5-5 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Moose | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—5; plant species per stop (min-avg-max)—24-30.4-43

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Alpine Dwarf Scrub- Lichen Mosaic Gravelly, Circles

Ecological Classification ID: R231XY134AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Sorted circles on mountains

Slope (percent): Min Max

4 55

Elevation (feet): Min Max

3,281 7,546

Range of Aspect Direction: All aspects

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: Very low

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

15 32

Mean Annual Air Temperature (°F): Low High

19 28

Monthly Data:

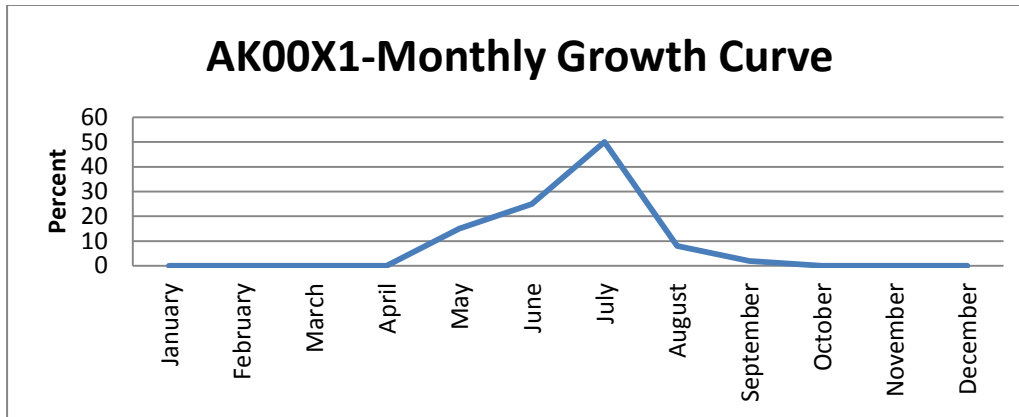
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -26 | 5 |
| February | 0 | 2 | -26 | 14 |
| March | 0 | 2 | -17 | 25 |
| April | 0 | 1 | 0 | 45 |
| May | 0 | 3 | 21 | 59 |
| June | 1 | 7 | 32 | 68 |
| July | 2 | 5 | 36 | 72 |
| August | 2 | 6 | 32 | 66 |
| September | 1 | 5 | 19 | 50 |
| October | 1 | 4 | 1 | 28 |
| November | 1 | 4 | -15 | 14 |
| December | 1 | 3 | -24 | 10 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31MT1—D31-Alpine scrub gravelly circles

D31MT2—D31-Alpine scrub gravelly circles

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive, nonacid, subgelic Typic Haploglepts

Dominant Parent Material: Gravelly cryoturbate

Representative Surface Texture: Gravelly silt loam

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 9 13 17

pH: Low RV High
 4.2 5.5 6.2

Effective CEC (me/100g): Low High
 3.5 4


CEC (me/100g): Min RV Max
 4 12.4 25

Organic Matter (percent): Low RV High
 2 3.3 6

Bulk Density (1/3-Bar): Min RV Max
 1.05 1.3 1.45

Plant Community Phases

| | | | |
|---|---|-------------|-----------|
| Ecological Site Description ID: | R231XY134AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This alpine ecological site is on summits, shoulders, and backslopes of mountains. Cryoturbation resulted in patterned ground features known as circles and stripes. Circles are in areas that have slopes of <5%, and stripes are in areas that have slopes of >5%. The vegetative communities and soils associated with circles and stripes are similar. The soils in community phase 1.1m are classified as Haplogelepts and are composed of thin organic matter over gravelly cryoturbate. Disturbances resulting in other community phases were not observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div style="border: 1px solid black; padding: 10px;"> <p>1. Reference State Alpine dwarf scrub-lichen mosaic gravelly circles R231XY134AK</p> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>1.1 (HCPC)</p> <p>Lichen herbaceous community mosaic</p> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>1.1 m (HPCPM)</p> <p>Mixed dwarf scrub-lichen dwarf scrubland mosaic wet</p> </div> </div> </div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>This site supports a mosaic of vegetative communities. For the climax phases, the dominant vegetation on rock piles is lichen and that on moist interspaces is dwarf shrubs.</p> <p>The height of dwarf shrubs is defined as less than 8 inches.</p> | | |

| | | | |
|--|--|-----------------------|------------------------------------|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Lichen herbaceous community mosaic |
| Community Phase Narrative: | | | |
| <p>This community consists primarily of crustose and foliose lichen that grow directly on exposed rock or in rock crevices. Common species include <i>Brodoa</i> sp., <i>Rhizocarpon</i> sp., and <i>Bryoria</i> sp. Shrubs, graminoids, forbs, and moss are minor vegetative components of this phase that grow in rock crevices.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No pathways observed. | | |

| | | | |
|--|-----------------------------|-----------------------|---|
| Phase 1.1m | See above. | | |
| Community Phase Number: | 1.1m | Community Phase Name: | Mixed dwarf scrub-lichen dwarf scrubland mosaic wet |
| Community Phase Narrative: | | | |
| <p>The dwarf shrub cover generally is more than 40% and diversity is high (13 observed species). Common dwarf shrubs include <i>Dryas octopetala</i>, <i>Cassiope tetragona</i>, <i>Salix sp.</i>, and <i>Loiseleuria procumbens</i>. Low and medium shrubs, such as <i>Betula glandulosa</i>, are present but are not a dominant component. The diversity of graminoids and forbs is high, but they are minor vegetative components. A common graminoid is <i>Carex bigelowii</i>. The diversity and abundance of lichen is high (>20 species; >30% ground cover), but individual species make up limited cover. Common species include <i>Flavocetraria cucullata</i> and <i>Cladina sp.</i></p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1A | No pathways observed. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase HCPC



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
48 57.2 66

Restrictive Features: None recorded

Drainage Class: Somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
0 0 0

Texture: Very gravelly loam, very gravelly sandy loam, silt loam, stony silt loam

AWC (cm/cm): Min RV Max
0.1 0.16 0.24

pH: Min RV Max
4.9 5.5 6.1

Subsurface Layer

Thickness (cm): Min RV Max
48 57.2 66

Texture: Very gravelly coarse sand, very gravelly sandy loam, extremely gravelly coarse sandy loam, very stony fine sandy loam, fine sandy loam, extremely stony fine sandy loam, extremely stony silt loam

AWC (cm/cm): Min RV Max
0.02 0.15 0.24

pH: Min RV Max
5.3 5.7 6.2

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 6-63 | 1-40 | 1-35 | 0-3 | 0-5 | 20-92 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GD (<4 inches) | 0.1-2 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-3 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-0.1 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—D (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|------------------------------|------------------|-------------------------|
| CAB15 | <i>Carex bigelowii</i> | 10-10-10 | 25 | 15.8 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| POPA2 | <i>Poa palustris</i> | 8-8-8 | 25 | 14.1 |
| CABI5 | <i>Carex bigelowii</i> | 0.1-2-5 | 75 | 12.3 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| SAAR27 | <i>Salix arctica</i> | 12-12-12 | 25 | 17.3 |
| DILA | <i>Diapensia lapponica</i> | 12-12-12 | 25 | 17.3 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 0-5-10 | 50 | 15.8 |
| DROC | <i>Dryas octopetala</i> | 3-4-5 | 50 | 14.1 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | | Spring |

Notable Plants: None observed

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—14-22.2-29

Community Phase HCPCM



Rooting Depth (cm): Min RV Max
46 51 56

Restrictive Features: None recorded

Drainage Class: Somewhat excessively drained

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Surface Layer

Thickness (cm): Min Avg Max
 0 3 6

Texture: Cobbly silt loam, channery silt loam, gravelly sandy loam, moderately decomposed plant material, silt loam, sandy loam, slightly decomposed plant material, stony moderately decomposed plant material, stony silt loam

AWC (cm/cm): Min RV Max
 0.12 0.3 0.35

pH: Min RV Max
 3.5 4.1 4.7

Subsurface Layer

Thickness (cm): Min RV Max
 46 48 50

Texture: Very gravelly sandy loam, extremely gravelly silt loam, extremely stony loam, very fine sandy loam

AWC (cm/cm): Min RV Max
 0.1 0.18 0.24

pH: Min RV Max
 4.5 5.3 5.9

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 0-90 | 0-35 | 0-53 | 0-3 | 0-10 | 0-70 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 5-5 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| SD (<8 inches) | --- | --- | 1-2 | --- |
| SL (8-36 inches) | --- | --- | 0.1-0.1 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|------------------------------|------------------|-------------------------|
| CAB15 | <i>Carex bigelowii</i> | 2-5.5-10 | 21 | 10.8 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| CAB15 | <i>Carex bigelowii</i> | 0.1-10.3-25 | 63 | 25.6 |
| HIAL3 | <i>Hierochloe alpina</i> | 3-6.7-15 | 37 | 15.7 |
| FEBR | <i>Festuca brachyphylla</i> | 1-6.5-20 | 21 | 11.7 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| ANNA | <i>Anemone narcissiflora</i> | 2-5.2-10 | 26 | 11.7 |
| BORI2 | <i>Boykinia richardsonii</i> | 1-5.3-10 | 16 | 9.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| DROC | <i>Dryas octopetala</i> | 0-18.6-60 | 58 | 32.9 |
| CATE11 | <i>Cassiope tetragona</i> | 1-14.3-70 | 63 | 30.1 |
| LOPR | <i>Loiseleuria procumbens</i> | 1-14.4-30 | 37 | 23.1 |
| SAPH | <i>Salix phlebophylla</i> | 1-9.3-40 | 47 | 21.0 |
| DRYAS | <i>Dryas</i> | 10-30-50 | 11 | 17.8 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 0.1-3.4-10 | 68 | 15.3 |
| EMNI | <i>Empetrum nigrum</i> | 0-5.1-15 | 42 | 14.7 |
| SAPO | <i>Salix polaris</i> | 1-4-10 | 32 | 11.2 |
| DILA | <i>Diapensia lapponica</i> | 0.1-2.3-7 | 42 | 9.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 50-50-50 | 5 | 16.2 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | | Caribou | Summer |
| Slight use | | Dall sheep | Summer |
| Slight use | Grasses and sedges | | Spring |
| Slight use | Grasses and sedges | Caribou | Summer |
| Slight use | Grasses and sedges | Dall sheep | Unknown |
| Slight use | Grasses and sedges | Other | Spring |
| Slight use | Lichen | Caribou | Unknown |
| Slight use | Lichen | Dall sheep | Unknown |
| Slight use | Willows | Caribou | Unknown |

Notable Plants: *Draba densifolia*

Species Richness: Number of stops—19; plant species per stop (min-avg-max)—14-25.7-40

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Scrub Peat Floodplain

Ecological Classification ID: R231XY137AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Depressions of terraces, terraces, thermokarst depressions of loess plains

Slope (percent): Min Max

0 5

Elevation (feet): Min Max

492 1,968

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

0 20

Flooding: None

Ponding: Frequency Duration

Frequent Very long

Runoff: Negligible

Frost-Free Days: Min Max

50 110

Mean Annual Precipitation (inches): Low High

9 21

Mean Annual Air Temperature (°F): Low High

23 28

Monthly Data:

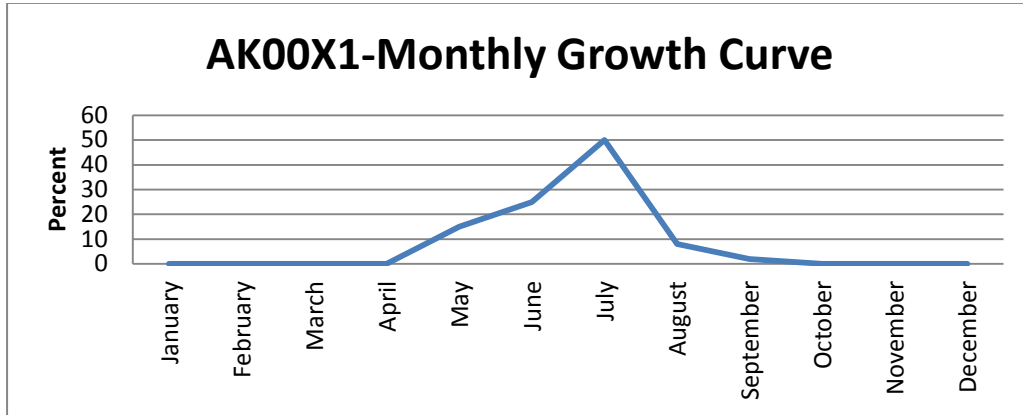
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31UC4—D31-Boreal scrub organic depressions

D31YV2—D31-Boreal scrub organic depressions

D31YV9—D31-Boreal scrub organic depressions

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid Typic Cryaquents

Dominant Parent Material: Mossy organic material over loamy alluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately high

AWC Total (cm): Low RV High
15 30 56

pH: Low RV High
3.4 6.7 7

Effective CEC (me/100g): Low High
22 40

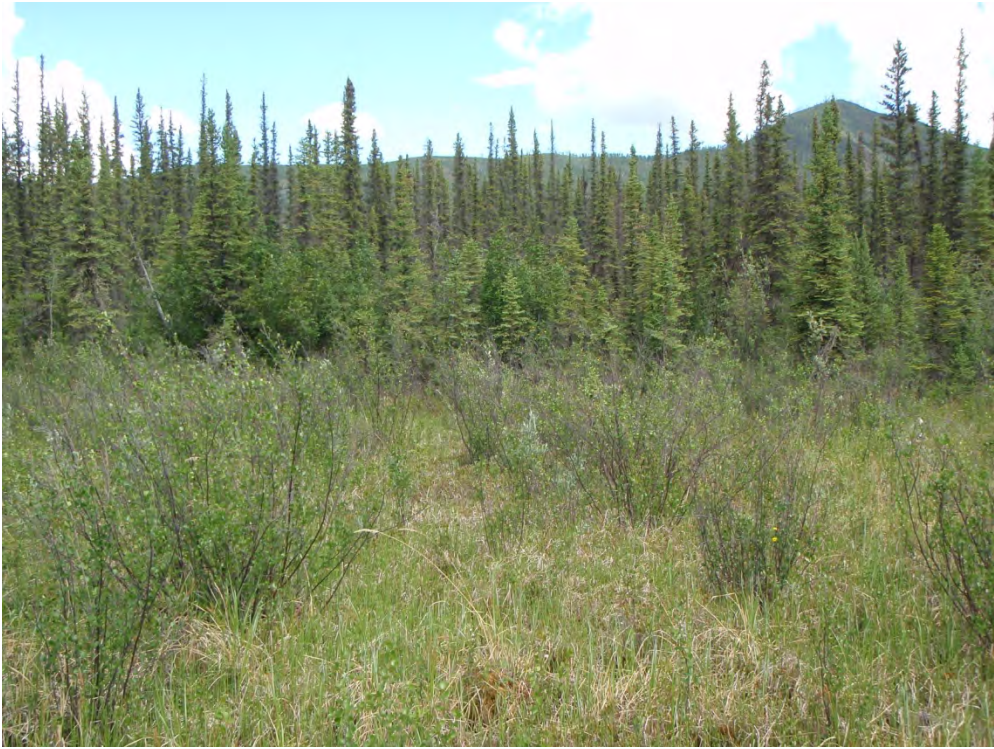
CEC (me/100g): Min RV Max
4 33 62

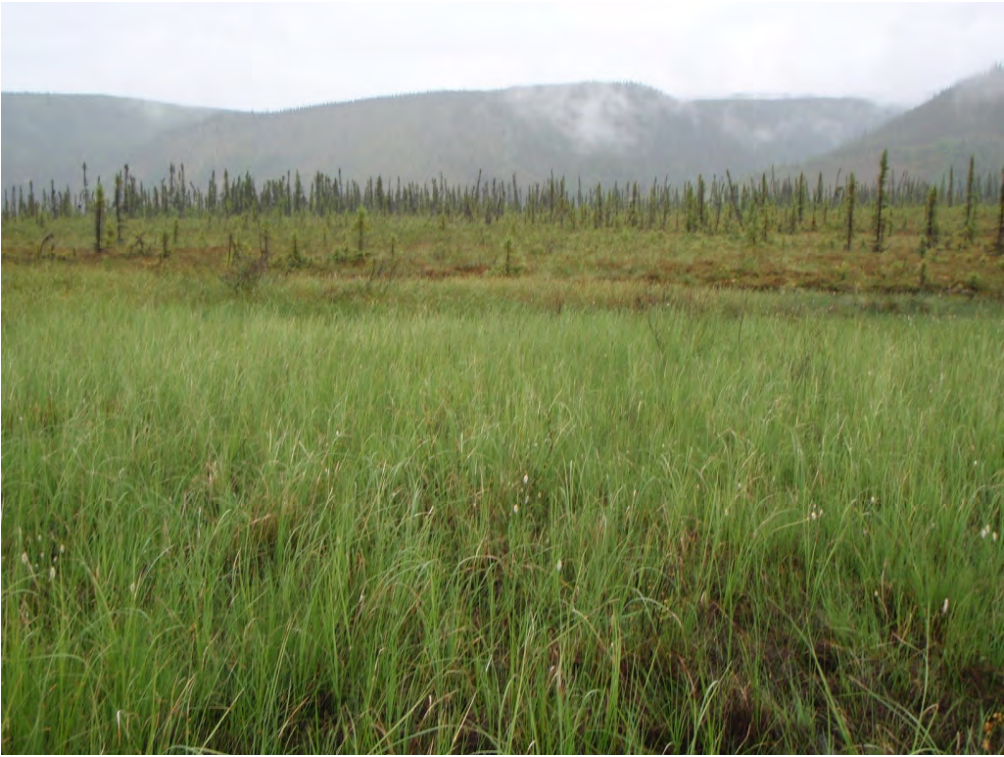
Organic Matter (percent): Low RV High
2 41 80


Bulk Density (1/3-Bar): Min RV Max
0.2 0.6 1.02

Plant Community Phases

| | | | |
|---|---|-------------|-----------|
| Ecological Site Description ID: | R231XY137AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is in linear depressions adjacent to river flood plains. The depressions tend to have some standing water but are cut off from the main river channel. The soils in community phase 1.1 are classified as Cryaquents and are composed of organic matter over loamy alluvium. The organic mat ranges from 54 to 158 centimeters thick. The thick organic mat and lack of flood plain depositional material near the soil surface suggests that these linear depressions are stable and not frequently flooded.</p> <p>The degree of ponding is believed to result in three distinct phases. The most saturated areas tend to be phase 1.3 and the least saturated areas tend to be phase 1.1. Ponded water is common on the soil surface in phases 1.2 and 1.3. Phase 1.3 tends to have a thicker organic mat (averages 142 cm. thick) as compared to phase 1.2 (averages 69.5 cm. thick) or phase 1.1 (61 cm. thick).</p> <p>Other disturbance regimes were not observed, and no alternate states were documented.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div>Boreal scrub peat floodplain</div><div>R231XY137AK</div><div><div><div>1.1 (HCPC) Dwarf birch-mixed ericaceous scrub-mixed sedge scrubland</div><div>1.2 (2PL) Water sedge-mixed ericaceous scrub-moss herbaceous community</div><div>1.3 (2PE) Water horsetail-mixed sedge-bog rosemary-<i>Sphagnum</i> herbaceous community</div></div><div><div>1.1 a</div><div>1.2 b</div><div>1.1 b</div><div>1.2 a</div><div>1.3 a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state were grouped on the basis of the structure and dominance of forb, graminoid, and shrub species, which are believed to be directly related to the degree of ponding in the linear depressions.</p> <p>The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Dwarf Birch-Mixed Ericaceous Scrub-Mixed Sedge Scrubland |
| Community Phase Narrative: | | | |
| <p>This phase is primarily a mixture of shrub and sedge species. A tree cover is not present. The majority of the shrub cover is in the medium and dwarf shrub strata (total shrub cover ~40%). Common shrub species include <i>Betula glandulosa</i>, <i>Andromeda polifolia</i>, and <i>Chamaedaphne calyculata</i>. Graminoids are prevalent (~50% cover), and common species include <i>Carex aquatilis</i>, <i>Carex microchaeta</i>, <i>Carex tenuiflora</i>, and <i>Carex bigelowii</i>. Forbs are <i>Equisetum fluviatile</i> and <i>Comarum palustre</i>, and they make up ~10% cover. Moss and lichen are not present. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Increased ponding may convert this scrub-dominant phase into a forb-dominant phase. | | |
| 1.1b | Increased ponding may convert this scrub-dominant phase into a sedge-dominant phase. | | |

| | | | |
|--|--|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Water Sedge-Mixed Ericaceous Scrub-Moss Herbaceous Community |
| Community Phase Narrative: | | | |
| <p>This phase dominantly consists of an assortment of sedges. Trees and shrubs are minor vegetative components. <i>Chamaedaphne calyculata</i> and <i>Andromeda polifolia</i> are common (total shrub cover ~10%). Sedges are prevalent (~60% cover), and the most common species is <i>Carex aquatilis</i>. Forbs and lichen are minor vegetative components. Moss forms an abundant ground cover (40% cover). Sphagnum moss is most common (~15% cover). Four observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Normal time and growth transition this sedge community into a scrub community. As the community shifts, the water table appears to move lower into the soil profile. | | |
| 1.2b | Increased ponding might convert this sedge-dominant phase into a forb-dominant phase. | | |

| | | | |
|--|---|-----------------------|--|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Water Horsetail-Mixed Sedge-Bog Rosemary-Sphagnum Herbaceous Community |
| Community Phase Narrative: | | | |
| <p>This phase consists dominantly of an assortment of forbs and sedges. Trees and shrubs are minor vegetative components. <i>Andromeda polifolia</i> is common (total shrub cover ~10%). Graminoids (~50% cover) and forbs (~50% cover) are abundant. Common graminoids are <i>Carex aquatilis</i>, <i>Carex limosa</i>, and <i>Carex vaginata</i>. Common forbs include <i>Equisetum fluviatile</i>, <i>Menyanthes trifoliata</i>, and <i>Comarum palustre</i>. Lichen is not present. Moss forms an abundant ground cover (20%). Sphagnum moss is prevalent (~15% cover). Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Normal time and growth transition this forb community to a sedge community. As the community shifts, the water table appears to move lower into the soil profile. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2PE



Rooting Depth (cm): Min RV Max
20 55 79

Restrictive Features: None recorded

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
20 40 60

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.2 6 7.4

Subsurface Layer

Thickness (cm): Min RV Max
40 60 79

Texture: Mucky peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
5.5 5.6 5.8

Influencing Water Features

NWI Code: PEM1

NWI Description: Palustrine, Emergent, Persistent

Rosgen Classification: None recorded

Structure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-1 | 50-95 | 10-35 | 0-2 | 0-1 | 0-0 | 5-30 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 45-45 | --- | --- | --- |
| GT (>24 inches) | 0.1-8 | --- | --- | --- |
| FD (<4 inches) | --- | 5-5 | --- | --- |
| FM (4-24 inches) | --- | 1-7 | --- | --- |
| FT (>24 inches) | --- | 55-55 | --- | --- |
| SD (<8 inches) | --- | --- | 10-10 | --- |
| SL (8-36 inches) | --- | --- | 0.1-3 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CALI7 | <i>Carex limosa</i> | 45-45-45 | 33 | 38.7 |
| CAVA2 | <i>Carex vaginata</i> | 40-40-40 | 33 | 36.5 |
| CAREX | <i>Carex</i> | 2-13.5-25 | 67 | 30.0 |
| CAAQ | <i>Carex aquatilis</i> | 25-25-25 | 33 | 28.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAAQ | <i>Carex aquatilis</i> | 8-8-8 | 33 | 16.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| METR3 | <i>Menyanthes trifoliata</i> | 10-10-10 | 33 | 18.3 |
| GATR2 | <i>Galium trifidum</i> | 5-5-5 | 33 | 12.9 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQFL | <i>Equisetum fluviatile</i> | 35-35-35 | 33 | 34.2 |
| COPA28 | <i>Comarum palustre</i> | 3-5-7 | 100 | 22.4 |
| METR3 | <i>Menyanthes trifoliata</i> | 5-6-7 | 67 | 20.0 |
| PAPA8 | <i>Parnassia palustris</i> | 1-3-5 | 67 | 14.1 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQFL | <i>Equisetum fluviatile</i> | 50-52.5-55 | 67 | 59.2 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| ANPO | <i>Andromeda polifolia</i> | 8-9-10 | 67 | 24.5 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| B EGL | <i>Betula glandulosa</i> | 7-7-7 | 33 | 15.3 |
| ANPO | <i>Andromeda polifolia</i> | 3-3-3 | 33 | 10.0 |
| SALIX | <i>Salix</i> | 3-3-3 | 33 | 10.0 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 3-3-3 | 33 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—11-12.7-15

Community Phase 2PL



Rooting Depth (cm): Min RV Max
17 103 190

Restrictive Features: None recorded

Drainage Class: Poorly drained

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Surface Layer

Thickness (cm): Min RV Max
17 42 64

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.9 6.3 7.6

Subsurface Layer

Thickness (cm): Min RV Max
77 102 124

Texture: Mucky peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.9 6.3 7.6

Influencing Water Features

NWI Code: L2EM2, PEM1, PLM1

NWI Description: Lacustrine, Littoral, Emergent, Nonpersistent; Palustrine, Emergent, Persistent; Palustrine, Moss-Lichen, Moss

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 5-95 | 15-40 | 0-1 | 0-5 | 0-0 | 0-30 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-30 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-1 | --- | --- |
| FM (4-24 inches) | --- | 15-15 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-2 | --- |
| SL (8-36 inches) | --- | --- | 0.1-7 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-0.1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| CAAQ | <i>Carex aquatilis</i> | 15-42.5-80 | 100 | 65.2 |
| ERSC2 | <i>Eriophorum scheuchzeri</i> | 20-20-20 | 25 | 22.4 |
| CATE5 | <i>Carex tenuiflora</i> | 20-20-20 | 25 | 22.4 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 15-15-15 | 25 | 19.4 |
| CAPO | <i>Carex podocarpa</i> | 10-10-10 | 25 | 15.8 |
| CAMIM | <i>Carex microchaeta ssp. microchaeta</i> | 10-10-10 | 25 | 15.8 |
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 25 | 11.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| METR3 | <i>Menyanthes trifoliata</i> | 0-2.5-5 | 50 | 11.2 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| EQPA | <i>Equisetum palustre</i> | 15-15-15 | 25 | 19.4 |
| COPA28 | <i>Comarum palustre</i> | 1-2-3 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| ANPO | <i>Andromeda polifolia</i> | 1-4.3-10 | 75 | 18.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHCA2 | <i>Chamaedaphne calyculata</i> | 1-5.7-15 | 75 | 20.6 |
| BENA | <i>Betula nana</i> | 0.1-4-7 | 75 | 17.4 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Caribou | Unknown |
| Slight use | Grasses and sedges | Moose | |

Notable Plants: None observed

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—7-12.2-17

Community Phase HCPC



Rooting Depth (cm): Min RV Max
18 40 61

Restrictive Features: None recorded

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
18 18 18

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
7.1 7.1 7.1

Subsurface Layer

Thickness (cm): Min RV Max
43 43 43

Texture: Mucky peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.9 6.3 7.6

Influencing Water Features

NWI Code: PSS6

NWI Description: Palustrine, Scrub-Shrub, Indeterminate Deciduous

Rosgen Classification: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 50-50 | 50-50 | 0-0 | 0-0 | 0-0 | 5-5 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-2 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 10-2 | --- | --- |
| SD (<8 inches) | --- | --- | 3-5 | --- |
| SM (3-10 feet) | --- | --- | 0.1-3 | --- |
| TR (<15 feet) | --- | --- | --- | 0.1-0.1 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CAAQ | <i>Carex aquatilis</i> | 15-15-15 | 100 | 38.7 |
| CATE5 | <i>Carex tenuiflora</i> | 10-10-10 | 100 | 31.6 |
| CABI5 | <i>Carex bigelowii</i> | 10-10-10 | 100 | 31.6 |
| CAMI4 | <i>Carex microchaeta</i> | 10-10-10 | 100 | 31.6 |
| CACA4 | <i>Calamagrostis canadensis</i> | 2-2-2 | 100 | 14.1 |
| CADI4 | <i>Carex diandra</i> | 2-2-2 | 100 | 14.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQFL | <i>Equisetum fluviatile</i> | 10-10-10 | 100 | 31.6 |
| COPA28 | <i>Comarum palustre</i> | 2-2-2 | 100 | 14.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-5-5 | 100 | 22.4 |
| ANPO | <i>Andromeda polifolia</i> | 5-5-5 | 100 | 22.4 |
| RUAR | <i>Rubus arcticus</i> | 3-3-3 | 100 | 17.3 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 25-25-25 | 100 | 50.0 |
| SACA4 | <i>Salix candida</i> | 3-3-3 | 100 | 17.3 |
| SAGL | <i>Salix glauca</i> | 2-2-2 | 100 | 14.1 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 1-1-1 | 100 | 10.0 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 1-1-1 | 100 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: *Salix candida*

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—20-20-20

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Scrub Loamy Depression

Ecological Classification ID: R231XY138AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Mountains, turf hummocks on hills

Slope (percent): Min Max

0 3

Elevation (feet): Min Max

656 2,133

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

2 40

Flooding: None

Ponding: Frequency Duration

Rare Brief

Runoff: Negligible

Frost-Free Days: Min Max

50 110

Mean Annual Precipitation (inches): Low High

9 21

Mean Annual Air Temperature (°F): Low High

23 28

Monthly Data:

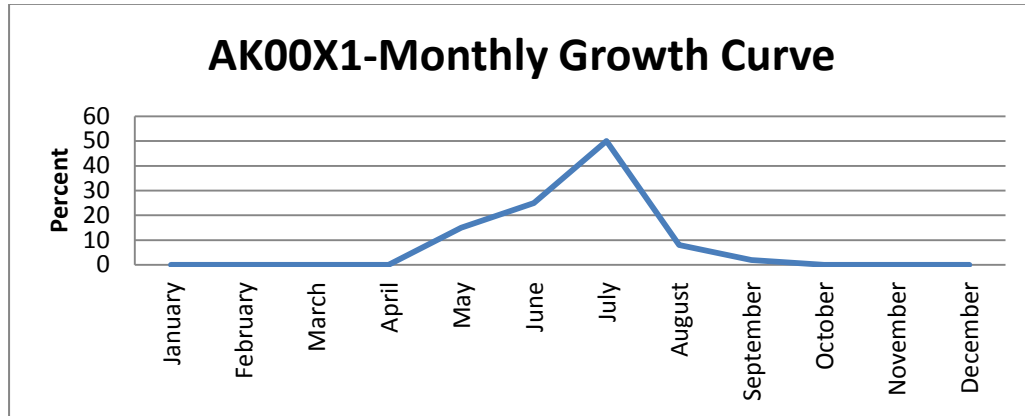
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31YV9—D31-Boreal scrub loamy depressions

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid Typic Cryaquents

Dominant Parent Material: Organic material over loamy alluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
15 37 65

pH: Low RV High
3.4 6.3 7.5

Effective CEC (me/100g): Low High
22 40


CEC (me/100g): Min RV Max
5.8 33.9 62


Organic Matter (percent): Low RV High
2 41 80

Bulk Density (1/3-Bar): Min RV Max
0.2 0.7 1.25

Plant Community Phases

| | | | |
|--|--|-------------|-----------|
| Ecological Site Description ID: | R231XY138AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is on linear depressions adjacent to river flood plains. The depressions tend to have some standing water, but they appear to be cut off from the main river channel. Indicators of seasonal flooding are common (i.e., freshly deposited alluvial material). The soils in community phase 1.1 are classified as Cryaquents and are composed of organic matter over loamy alluvium. The thickness of the organic material is 0 to 35 centimeters in phase 1.2 and 24 centimeters in phase 1.1.</p> <p>Two phases were observed. Other disturbance regimes were not observed, and no alternate states were documented.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div><div>Boreal scrub loamy depression</div><div>R231XY138AK</div></div><div><div>1.1 (HCPC) Scrub birch-mixed willow-sedge-moss scrubland</div><div>1.2 (2PL) Mixed sedge-horsetail herbaceous community</div><div><div>↑ 1.2 b</div><div>↓ 1.1 a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state were grouped on the basis of the structure and dominance of graminoid and shrub species, which are believed to relate to flood events.</p> <p>The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|--|---|--|---|
| Phase 1.1 | |  | |
| Community Phase Number: | 1.1 | Community Phase Name: | Scrub Birch-Mixed Willow-Sedge-Moss Scrubland |
| Community Phase Narrative: | | | |
| <p>This phase is characterized by a dominance of scrub species. Seedlings of <i>Betula neoalaskana</i> and <i>Picea mariana</i> are present but not in abundance. The majority of the shrub cover is in the medium stratum (total scrub cover ~70%), and the most common species were <i>Betula glandulosa</i>, <i>Salix interior</i>, and <i>Salix pulchra</i>. Graminoids make up ~15% cover, and the species include <i>Carex bigelowii</i>, <i>Carex aquatilis</i>, and <i>Calamagrostis canadensis</i>. Forbs and lichen are minor vegetative components. Moss forms an extensive ground cover (~80%). One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Increased flood activity might convert this scrub-dominant phase into a sedge-dominant phase. | | |

| | | | |
|--|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Mixed Sedge-Horsetail Herbaceous Community |
| Community Phase Narrative: | | | |
| <p>This phase is characterized by a dominance of sedge and horsetail species. Trees and shrubs are minor vegetative components. The diversity and abundance of graminoids is high (~80% cover), and common species include <i>Carex aquatilis</i>, <i>Carex atherodes</i>, and <i>Carex utriculata</i>. Forbs make up ~20% cover, and the most common species is <i>Equisetum fluviatile</i>. Moss and lichen are minor vegetative components. Five observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | <p>Normal time and growth transition this sedge community into a scrub community. This shift may be due to the flood regime in the depressions.</p> | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2PL



Rooting Depth (cm): Min RV Max
57 91.5 126

Restrictive Features: None recorded

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 1.5 3

Texture: Muck, silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.25 0.3 0.4

pH: Min RV Max
5.1 5.5 5.8

Subsurface Layer

Thickness (cm): Min RV Max
57 90 123

Texture: Loam, silt loam, fine sand

AWC (cm/cm): Min RV Max
0.06 0.17 0.25

pH: Min RV Max
5.5 6 6.5

Influencing Water Features

NWI Code: L2EM2, PEM1, PUB2, PSS1

NWI Description: Lacustrine, Littoral, Emergent, Nonpersistent; Palustrine, Emergent, Persistent;
Palustrine, Unconsolidated Bottom, Sand; Palustrine, Scrub-Shrub, Broad-Leaved Deciduous

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point bars

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 0-40 | 3-100 | 0-85 | 0-15 | 0-0 | 0-3 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 10-45 | --- | --- | --- |
| FT (>24 inches) | --- | 45-45 | --- | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum: GD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| ALAE | <i>Alopecurus aequalis</i> | 5-5-5 | 20 | 10.0 |

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ERAN6 | <i>Eriophorum angustifolium</i> | 65-65-65 | 20 | 36.1 |
| CAAQ | <i>Carex aquatilis</i> | 15-15-15 | 20 | 17.3 |
| BESY | <i>Beckmannia syzigachne</i> | 15-15-15 | 20 | 17.3 |
| GLGR | <i>Glyceria grandis</i> | 10-10-10 | 20 | 14.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CAAT2 | <i>Carex atherodes</i> | 99-99-99 | 20 | 44.5 |
| CAUT | <i>Carex utriculata</i> | 65-65-65 | 20 | 36.1 |
| CABI5 | <i>Carex bigelowii</i> | 45-45-45 | 20 | 30.0 |
| CAAQ | <i>Carex aquatilis</i> | 45-45-45 | 20 | 30.0 |
| CACA4 | <i>Calamagrostis canadensis</i> | 40-40-40 | 20 | 28.3 |
| GLGR | <i>Glyceria grandis</i> | 10-10-10 | 20 | 14.1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQFL | <i>Equisetum fluviatile</i> | 25-35-45 | 40 | 37.4 |
| EQHY | <i>Equisetum hyemale</i> | 25-25-25 | 20 | 22.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAAL | <i>Salix alaxensis</i> | 6-6-6 | 20 | 11.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Moose | Summer |

Notable Plants: *Carex atherodes*

Species Richness: Number of stops—5; plant species per stop (min-avg-max)—2-6-11

Community Phase HCPC



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
26 64 115

Restrictive Features: None recorded

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 19.7 35

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
6.3 6.5 6.6

Subsurface Layer

Thickness (cm): Min RV Max
26 44.3 80

Texture: Silt loam

AWC (cm/cm): Min RV Max
0.08 0.22 0.25

pH: Min RV Max
5.5 6.3 6.7

Influencing Water Features

NWI Code: PSS1

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-2 | 80-80 | 40-40 | 0-0 | 0-0 | 0-0 | 1-1 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 5-5 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.01-3 | --- | --- |
| SD (<8 inches) | --- | --- | 3-3 | --- |
| SL (8-36 inches) | --- | --- | 1-2 | --- |
| SM (3-10 feet) | --- | --- | 10-30 | --- |
| TR (<15 feet) | --- | --- | --- | 1-1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|---------------------------------|---------------------------------|------------------|-----------------------------------|
| CAB15 | <i>Carex bigelowii</i> | 5-5-5 | 100 | 22.4 |
| CAAQ | <i>Carex aquatilis</i> | 5-5-5 | 100 | 22.4 |
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 100 | 22.4 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|-----------------------------|---------------------------------|------------------|-----------------------------------|
| EQFL | <i>Equisetum fluviatile</i> | 3-3-3 | 100 | 17.3 |
| COPA28 | <i>Comarum palustre</i> | 2-2-2 | 100 | 14.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|-----------------------------|---------------------------------|------------------|-----------------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 3-3-3 | 100 | 17.3 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|--------------------------------------|---------------------------------|------------------|-----------------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 2-2-2 | 100 | 14.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|-------------------------------------|---------------------------------|------------------|-----------------------------------|
| BEGL | <i>Betula glandulosa</i> | 30-30-30 | 100 | 54.8 |
| SAPU15 | <i>Salix pulchra</i> | 20-20-20 | 100 | 44.7 |
| SAIN3 | <i>Salix interior</i> | 10-10-10 | 100 | 31.6 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 2-2-2 | 100 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> <u>Index</u> |
|---------------------|---------------------------|---------------------------------|------------------|-----------------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 1-1-1 | 100 | 10.0 |
| PIMA | <i>Picea mariana</i> | 1-1-1 | 100 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—19-19-19

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Subalpine Scrub Loamy Slopes

Ecological Classification ID: R231XY139AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Hills, nonsorted circles on hills, turf hummocks on hills

Slope (percent): Min Max

1 5

Elevation (feet): Min Max

3,117 4,183

Range of Aspect Direction: All aspects

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: Low

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

16 26

Mean Annual Air Temperature (°F): Low High

23 28

Monthly Data:

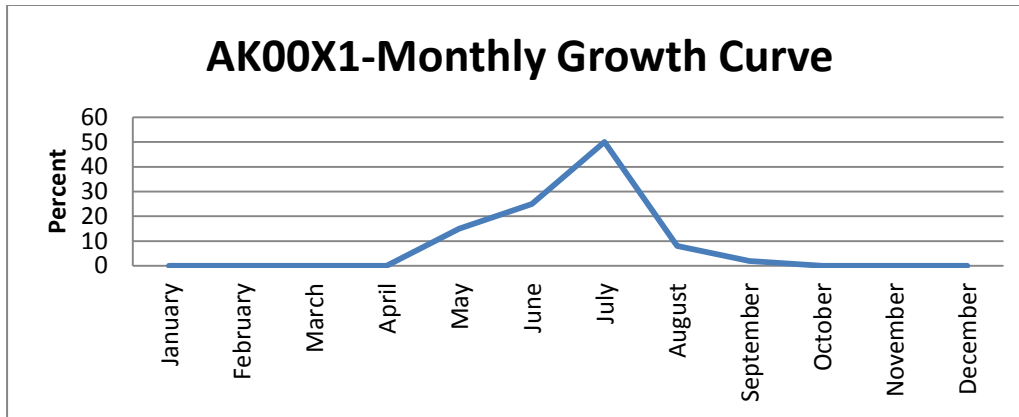
| <u>Month</u> | <u>Precipitation (in)</u> | <u>Precipitation (in)</u> | <u>Temperature (°F)</u> | <u>Temperature (°F)</u> |
|--------------|---------------------------|---------------------------|-------------------------|-------------------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31TF1—D31-Subalpine scrub loamy residual slopes

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive Typic Haplocrypts

Dominant Parent Material: Organic material over gravelly residuum

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 5 8 13

pH: Low RV High
 3.4 5.1 6.2

Effective CEC (me/100g): Low High
 11 30.3


CEC (me/100g): Min RV Max
 4 25.8 62

Organic Matter (percent): Low RV High
 2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 0.9 1.38

Plant Community Phases

| | | | |
|--|---|-------------|-----------|
| Ecological Site Description ID: | R231XY139AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This subalpine ecological site is on broad, rounded summits/shoulders of hills at high elevations (<10% slopes, 1,050 to 1,200 meters elevation). Sporadic white spruce is present, but the tree cover generally is <5% and limited in large part due to the cold microclimate. The plant communities are similar to those of site R231XY164AK, but they differ because of a lack of fire disturbance. This ecological site was observed specifically in the Three-Fingers Basin. The soils in community phase 1.1 are classified as Haplocrypts and are composed of organic matter over gravelly residuum. Disturbances resulting in other plant community phases were not observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div style="border: 1px solid black; padding: 10px; margin: 10px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> 1. Reference State subalpine scrub loamy slopes R231XY139AK </div> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <div style="text-align: center;"> <p>1.1 (HCPC)</p> <p>Scrub birch-mixed ericaceous scrub-lichen scrubland</p> </div> </div> </div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Vegetation is primarily a mixture of medium shrubs, low shrubs, dwarf shrubs, and lichen.</p> <p>The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches. Only one phase for this reference state was observed. Due to the regional specificity and remoteness of this ecological site, only three observations were conducted.</p> | | |

| | | | |
|---|-----------------------------|--|---|
| Phase 1.1 | |  | |
| Community Phase Number: | 1.1 | Community Phase Name: | Scrub birch-mixed ericaceous scrub-lichen scrubland |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i> is present, but it generally makes up <5% cover. Mature trees average 85 years of age. The shrub cover is distributed among the medium, low, and dwarf strata (total shrub cover ~95%), and the most common species are <i>Betula glandulosa</i>, <i>Vaccinium uliginosum</i>, and <i>Empetrum nigrum</i>. The forb and graminoid cover is limited, but <i>Carex bigelowii</i> is common. The diversity of lichen is high (12 species), but individual species make up limited cover. The most abundant lichen are <i>Masonhalea richardsonii</i> and <i>Stereocaulon tomentosum</i>.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No observed pathways. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase HCPC



Rooting Depth (cm): Min RV Max
33 41 52

Restrictive Features: None recorded

Drainage Class: Somewhat excessively drained

Surface Layer

Thickness (cm): Min RV Max
10 12.3 15

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.6 3.9 4.2

Subsurface Layer

Thickness (cm): Min RV Max
23 28.7 37

Texture: Gravelly sandy loam, very gravelly coarse sandy loam, very gravelly sandy loam, extremely gravelly sandy loam, silt loam, sandy loam

AWC (cm/cm): Min RV Max
0.08 0.12 0.25

pH: Min RV Max
4 5 6.2

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 45-65 | 35-40 | 5-20 | 0-5 | 1-1 | 1-5 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-3 | --- | --- | --- |
| GT (>24 inches) | 2-2 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| SD (<8 inches) | --- | --- | 1-5 | --- |
| SL (8-36 inches) | --- | --- | 15-3 | --- |
| SM (3-10 feet) | --- | --- | 30-30 | --- |
| TR (<15 feet) | --- | --- | --- | 2-2 |
| TS (<15 feet) | --- | --- | --- | 2-2 |
| TM (15-40 feet) | --- | --- | --- | 3-3 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 10-10-10 | 100 | 31.6 |
| CAREX | <i>Carex</i> | 3-3-3 | 33 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 10-11.7-15 | 100 | 34.2 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-6.7-10 | 100 | 25.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 15-25-40 | 100 | 50.0 |
| BEGl | <i>Betula glandulosa</i> | 60-60-60 | 33 | 44.7 |
| SAPU15 | <i>Salix pulchra</i> | 3-6.5-10 | 67 | 20.8 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 1-1.5-2 | 67 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------|---------------------------------|------------------|----------------------------|
| BEGL | <i>Betula glandulosa</i> | 30-35-40 | 67 | 48.3 |
| SAPU15 | <i>Salix pulchra</i> | 10-10-10 | 33 | 18.3 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 2-2-2 | 67 | 11.5 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 1-2.7-5 | 100 | 16.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 3-3-3 | 33 | 10.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Picea glauca</i> | 77-85-93 | 6.3-7-7.6 | 18-20-23 | 2 | B |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—22-26.7-29

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Subalpine Scrub Loamy Hummock

Ecological Classification ID: R231XY148AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Earth hummocks on hills, turf hummocks on hills

Slope (percent): Min Max
 5 65

Elevation (feet): Min Max
 2,953 4,429

Range of Aspect Direction: East to west (clockwise)

Water Table Depth (cm): None recorded

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max
 50 80

Mean Annual Precipitation (inches): Low High
 15 32

Mean Annual Air Temperature (°F): Low High
 19 28

Monthly Data:

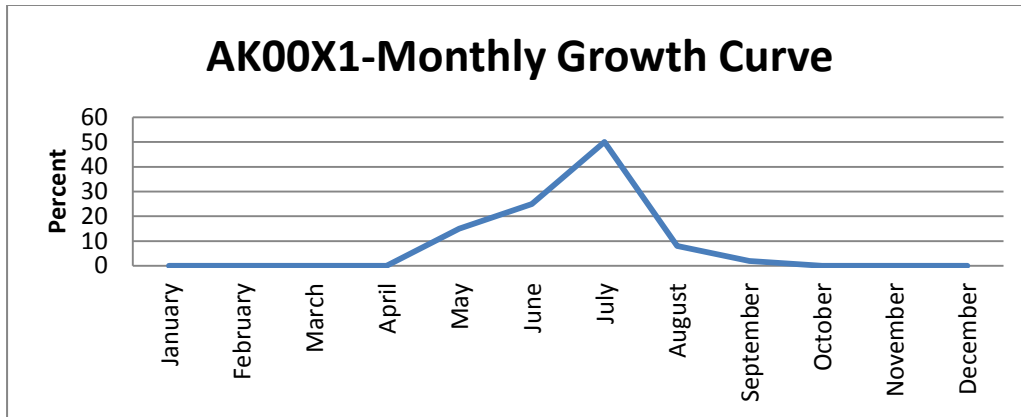
| <u>Month</u> | <u>Precipitation (in)</u> | <u>Precipitation (in)</u> | <u>Temperature (°F)</u> | <u>Temperature (°F)</u> |
|--------------|---------------------------|---------------------------|-------------------------|-------------------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31MT3—D31-Subalpine scrub silty till slopes

D31TF2—D31-Subalpine scrub silty till slopes

D31UC5—D31-Subalpine scrub silty till slopes

Characteristics of Representative Soil Components

Soil Classification: Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryorthents

Dominant Parent Material: Organic material over loess over gravelly till

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Loamy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 6 11 17

pH: Low RV High
 3.4 5.5 6.9

Effective CEC (me/100g): Low High
 11.1 33.9


CEC (me/100g): Min RV Max
 4.9 24.4 62

Organic Matter (percent): Low RV High
 1.5 22.4 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 0.9 1.34

Plant Community Phases

| | | | | | | | | | | | | | | | |
|---|--|-------------------------------|-------------|---|-----------------|-------------------------------|-------------|---|--|--|--|---|--|--|--|
| Ecological Site Description ID: | R231XY148AK | | | | | | | | | | | | | | |
| Ecological Dynamics of the Site: | | | | | | | | | | | | | | | |
| <p>This subalpine ecological site is at high elevations on backslopes of mountains (slope ranges from 5 to 45%; elevation ranges from 1,000 to 1,250 meters). The site is characterized as scrubland on hummocky terrain. No disturbance regime is documented. No alternate states were observed. This ecological site is similar to site R231XY185AK, but site R231XY148AK is in a different landform position. The soils in community phase 1.1 are classified as Cryorthents and are composed of organic matter over loess and gravelly colluvium.</p> | | | | | | | | | | | | | | | |
| State and Transition Diagram: | | | | | | | | | | | | | | | |
| <table border="1"> <tr> <td>1.</td> <td>Reference State</td> <td>Subalpine scrub loamy hummock</td> <td>R231XY148AK</td> </tr> <tr> <td colspan="4"> <table border="1"> <tr> <td colspan="4"> 1.1 (HCPC) Willow-scrub birch-mixed ericaceous scrub- graminoid-feathermoss scrubland </td> </tr> </table> </td> </tr> </table> | | | | 1. | Reference State | Subalpine scrub loamy hummock | R231XY148AK | <table border="1"> <tr> <td colspan="4"> 1.1 (HCPC) Willow-scrub birch-mixed ericaceous scrub- graminoid-feathermoss scrubland </td> </tr> </table> | | | | 1.1 (HCPC) Willow-scrub birch-mixed ericaceous scrub- graminoid-feathermoss scrubland | | | |
| 1. | Reference State | Subalpine scrub loamy hummock | R231XY148AK | | | | | | | | | | | | |
| <table border="1"> <tr> <td colspan="4"> 1.1 (HCPC) Willow-scrub birch-mixed ericaceous scrub- graminoid-feathermoss scrubland </td> </tr> </table> | | | | 1.1 (HCPC) Willow-scrub birch-mixed ericaceous scrub- graminoid-feathermoss scrubland | | | | | | | | | | | |
| 1.1 (HCPC) Willow-scrub birch-mixed ericaceous scrub- graminoid-feathermoss scrubland | | | | | | | | | | | | | | | |
| State and Transition Diagram: | 1 | State Name: | Reference | | | | | | | | | | | | |
| State Narrative: | <p>For the climax phase, the dominant vegetation is a mixture of various shrubs, graminoids, and moss. Trees, forbs, and lichen are minimal vegetative components. The site is characterized as scrubland, but the dominant shrubs are in the medium, low, and dwarf shrub strata. Generally, as elevation increases, the dominant shrubs transition from medium to dwarf species. The majority of the observations were in areas that supported dominantly medium shrub species.</p> <p>The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | | | | | | | | | | | | | |

| | | | |
|--|--|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Willow-scrub birch-mixed ericaceous scrub-graminoid-feathermoss scrubland |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i> is present in trace amounts. Shrubs are the dominant form of vegetation and are estimated to make up >90% cover. The shrubs are evenly distributed among the medium, low, and dwarf shrub strata. The most common medium shrubs are <i>Salix pulchra</i> and <i>Betula glandulosa</i>, the most common low shrubs are <i>Betula glandulosa</i> and <i>Vaccinium uliginosum</i>, and the most common dwarf shrubs are <i>Vaccinium vitis-idaea</i>, <i>Empetrum nigrum</i>, and <i>Ledum palustre</i>. Graminoids are more abundant than forbs or lichen. The most common graminoid is <i>Carex bigelowii</i>. Forbs make up minimal cover, but diversity is high. Moss is an abundant ground cover, and the most common species are <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i>.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No pathway observed. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 22 69.7 143

Restrictive Features: None recorded

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 3 10.4 22

Texture: Silt loam, moderately decomposed plant material, slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.23 0.34 0.35

pH: Min RV Max
 3.3 4.7 6.2

Subsurface Layer

Thickness (cm): Min RV Max
 19 59.3 121

Texture: Gravelly coarse sandy loam, gravelly loam, gravelly silt loam, gravelly sandy loam, very cobbly coarse sandy loam, very gravelly coarse sandy loam, very gravelly loam, very cobbly silt loam, extremely cobbly coarse sand, very gravelly silt loam, extremely cobbly loamy coarse sand, very gravelly sandy loam, extremely gravelly coarse sand, extremely gravelly coarse sandy loam, extremely gravelly loamy sand, silt, loam, silt loam, moderately decomposed plant material, stony silt loam, very stony silt loam, very stony sandy loam, extremely stony coarse sandy loam, fine sandy loam, extremely stony silt loam, extremely stony sandy loam

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

AWC (cm/cm): Min RV Max
0.02 0.15 0.35

pH: Min RV Max
4.1 5.8 7.2

Influencing Water Features

NWI Code: PSS1

NWI Description: Palustrine Scrub-Shrub, Broad-Leaved Deciduous

Rosgen Classification: Steep, entrenched, cascading step-pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-75 | 8-90 | 2-60 | 0-10 | 0-5 | 0-15 | 0-2 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 4-50 | --- | --- | --- |
| FD (<4 inches) | --- | 3-4 | --- | --- |
| FM (4-24 inches) | --- | 2-6 | --- | --- |
| SD (<8 inches) | --- | --- | 12-7 | --- |
| SL (8-36 inches) | --- | --- | 25-5 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 1-7.8-45 | 87 | 26.1 |
| FEAL | <i>Festuca altaica</i> | 50-50-50 | 7 | 18.3 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-6.2-20 | 33 | 14.4 |
| POPA2 | <i>Poa palustris</i> | 0.1-6.3-15 | 27 | 12.9 |
| POARA2 | <i>Poa arctica</i> ssp. <i>arctica</i> | 3-6.7-10 | 20 | 11.5 |
| FEBR | <i>Festuca brachyphylla</i> | 15-15-15 | 7 | 10.0 |
| POPO9 | <i>Poa porsildii</i> | 3-6.5-10 | 13 | 9.3 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| FEAL | <i>Festuca altaica</i> | 2-6.8-20 | 33 | 15.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| ACDE2 | <i>Aconitum delphinifolium</i> | 0.1-3.7-7 | 40 | 12.1 |
| MEPA | <i>Mertensia paniculata</i> | 1-4.4-10 | 33 | 12.1 |
| ARARA2 | <i>Artemisia arctica</i> ssp. <i>arctica</i> | 0-3.8-10 | 33 | 11.3 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 55-60-65 | 13 | 28.3 |
| EMNI | <i>Empetrum nigrum</i> | 1-9.8-25 | 80 | 27.9 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 0.1-8.2-25 | 93 | 27.6 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 1-11.5-25 | 27 | 17.5 |
| RUAR | <i>Rubus arcticus</i> | 1-6.8-20 | 33 | 15.1 |
| DROC | <i>Dryas octopetala</i> | 0.1-3.7-12 | 47 | 13.2 |
| SACH | <i>Salix chamissonis</i> | 2-7.3-10 | 20 | 12.1 |
| SAPH | <i>Salix phlebophylla</i> | 1-4.5-15 | 27 | 11.0 |
| ARAL2 | <i>Arctostaphylos alpina</i> | 0-2.4-6 | 47 | 10.6 |
| SARE2 | <i>Salix reticulata</i> | 2-8.5-15 | 13 | 10.6 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| B EGL | <i>Betula glandulosa</i> | 15-38.1-55 | 53 | 45.1 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-11.2-25 | 80 | 29.9 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 1-9.2-25 | 33 | 17.5 |
| SAPU15 | <i>Salix pulchra</i> | 0.1-5.5-15 | 40 | 14.9 |
| BENA | <i>Betula nana</i> | 25-25-25 | 7 | 12.9 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------|---------------------------------|------------------|----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 1-47-75 | 53 | 50.1 |
| B EGL | <i>Betula glandulosa</i> | 10-27.4-55 | 33 | 30.2 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Picea glauca</i> | 167-167-167 | 7.8-9-10.5 | 17-28-40 | 2 | B |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Other woody plants | Moose | Unknown |
| Moderate use | Willows | Moose | Summer |
| No observed use | | | Not grazed/browsed |
| Slight use | Lichen | Caribou | Unknown |
| Slight use | Other woody plants | Caribou | Unknown |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Other woody plants | Other | Unknown |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Summer |
| Slight use | Willows | Moose | Unknown |
| Slight use | Willows | Moose | Winter |

Notable Plants: *Pedicularis groenlandica*, *Koeleria macrantha*, *Poa porsildii*

Species Richness: Number of stops—15; plant species per stop (min-avg-max)—12-29.1-46

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Subalpine Graminoid Peat Swale

Ecological Classification ID: R231XY149AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Swales of hills

Slope (percent): Min Max

0 5

Elevation (feet): Min Max

2,625 3,937

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

0 20

Flooding: None

Ponding: Frequency Duration

Frequent Very long

Runoff: Negligible

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

17 29

Mean Annual Air Temperature (°F): Low High

21 28

Monthly Data:

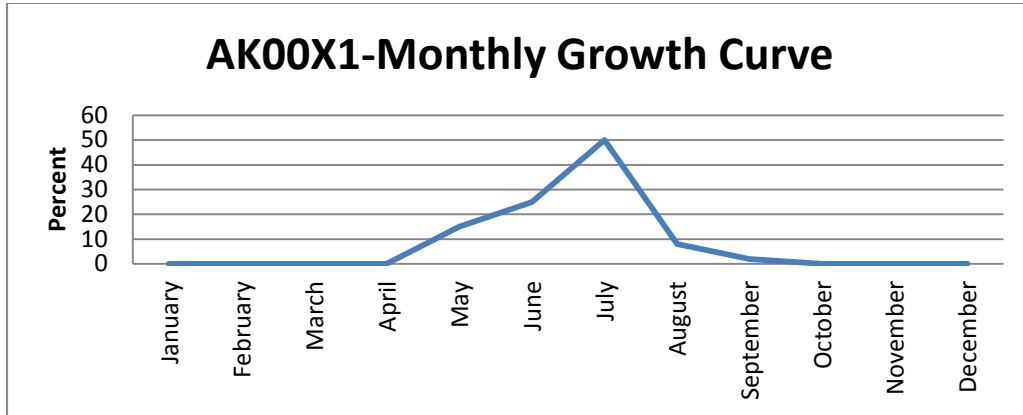
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31TF2—D31-Subalpine grass organic swales

Characteristics of Representative Soil Components

Soil Classification: Loamy, mixed, euic Terric Cryofibrists

Dominant Parent Material: Organic material over loamy alluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Loamy

Saturated Hydraulic Conductivity: Very low to moderately high

AWC Total (cm): Low RV High
15 30 58

pH: Low RV High
4.4 6.1 6.7

Effective CEC (me/100g): Low High
29.9 55.8


CEC (me/100g): Min RV Max
6.8 34.4 62

Organic Matter (percent): Low RV High
2 41 80

Bulk Density (1/3-Bar): Min RV Max
0.24 0.7 1.15

Plant Community Phases

| | | | | | | | | | |
|--|---|-------------|-----------|--------------------|--------------------------------|-------------|---|--|--|
| Ecological Site Description ID: | R231XY149AK | | | | | | | | |
| Ecological Dynamics of the Site: | | | | | | | | | |
| <p>This subalpine ecological site is on footslopes and/or toeslopes of hills (<5% slopes). This site is referred to as a swale because the associated community is in areas that do not have channelized surface water. Standing water covers ~50% of the soil surface. The soils in community phase 1.1 are classified as Cryofibrists and are composed of organic matter over loamy alluvium. Disturbances resulting in other plant community phases were not observed.</p> | | | | | | | | | |
| State and Transition Diagram: | | | | | | | | | |
| <table border="1" style="width: 100%;"> <tr> <td style="width: 33%;">1. Reference State</td> <td style="width: 33%;">Subalpine graminoid peat swale</td> <td style="width: 33%;">R231XY149AK</td> </tr> <tr> <td colspan="3" style="text-align: center;"> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 60%;"> 1.1 (HCPC) Mixed sedge herbaceous community </div> </td> </tr> </table> | | | | 1. Reference State | Subalpine graminoid peat swale | R231XY149AK | <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 60%;"> 1.1 (HCPC) Mixed sedge herbaceous community </div> | | |
| 1. Reference State | Subalpine graminoid peat swale | R231XY149AK | | | | | | | |
| <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 60%;"> 1.1 (HCPC) Mixed sedge herbaceous community </div> | | | | | | | | | |
| State and Transition Diagram: | 1 | State Name: | Reference | | | | | | |
| State Narrative: | <p>For the climax phase, the vegetation is primarily mixed sedges. Because there is no evidence of disturbance, only one phase for this reference state is documented. Due to the regional specificity and remoteness of this ecological site, only three observations were conducted.</p> <p>The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | | | | | | | |

| | | | |
|---|--|-----------------------|----------------------------------|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Mixed sedge herbaceous community |
| Community Phase Narrative: | | | |
| <p>No tree species were observed in this ecological site. The shrub cover is primarily in the low and dwarf shrub strata. The most abundant low shrub species is <i>Salix pulchra</i>, and most abundant dwarf shrub species is <i>Andromeda polifolia</i>. Graminoids, primarily sedges, are the most abundant vegetation. Seven graminoid species grow on this ecological site, but the most common species are <i>Carex aquatilis</i>, <i>Eriophorum angustifolium</i>, and <i>Carex tenuiflora</i>. Lichen, forbs, and moss species are limited. The only observed forb is <i>Comarum palustre</i>, and the only observed moss is <i>Sphagnum sp.</i></p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | No observed pathway. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase HCPC



Rooting Depth (cm): Min RV Max
64 64 64

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
63 63 63

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
5.5 6.3 6.7

Subsurface Layer

Thickness (cm): Min RV Max
1 1 1

Texture: Silt loam, mucky peat

AWC (cm/cm): Min RV Max
0.23 0.29 0.35

pH: Min RV Max
5.2 6.4 6.7

Influencing Water FeaturesNWI Code: PEM1, PEM2NWI Description: Palustrine, Emergent, Persistent; Palustrine, Emergent, NonpersistentRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 15-45 | 60-70 | 0-1 | 0-0 | 0-0 | 40-65 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-45 | --- | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-5 | --- |
| SL (8-36 inches) | --- | --- | 1-3 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CAAQ | <i>Carex aquatilis</i> | 30-32.5-35 | 67 | 46.5 |
| ERAN6 | <i>Eriophorum angustifolium</i> | 10-27.5-45 | 67 | 42.8 |
| CATE5 | <i>Carex tenuiflora</i> | 30-30-30 | 33 | 31.6 |
| CABI5 | <i>Carex bigelowii</i> | 20-20-20 | 33 | 25.8 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 15-15-15 | 33 | 22.4 |
| TRCA30 | <i>Trichophorum caespitosum</i> | 10-10-10 | 33 | 18.3 |
| JUAL4 | <i>Juncus alpinoarticulatus</i> | 5-5-5 | 33 | 12.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CAAQ | <i>Carex aquatilis</i> | 70-70-70 | 33 | 48.3 |
| ERAN6 | <i>Eriophorum angustifolium</i> | 10-10-10 | 33 | 18.3 |
| CACA4 | <i>Calamagrostis canadensis</i> | 10-10-10 | 33 | 18.3 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| COPA28 | <i>Comarum palustre</i> | 15-15-15 | 33 | 22.4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--------------------------------------|---------------------------------|------------------|----------------------------|
| ANPO | <i>Andromeda polifolia</i> | 2-3.5-5 | 67 | 15.3 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-5-5 | 33 | 12.9 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 3-5-7 | 67 | 18.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 3-3-3 | 33 | 10.0 |
| BENA | <i>Betula nana</i> | 3-3-3 | 33 | 10.0 |
| B EGL | <i>Betula glandulosa</i> | 3-3-3 | 33 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 0-0-0 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—6-9.7-13

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Moss Peat Plain

Ecological Classification ID: R231XY150AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: High flood plains, thermokarst depressions of loess plains and terraces

Slope (percent): Min Max

0 1

Elevation (feet): Min Max

1,312 2,461

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

0 20

Flooding: None

Ponding: Frequency Duration

Frequent Very long

Runoff: Negligible

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

11 15

Mean Annual Air Temperature (°F): Low High

27 28

Monthly Data:

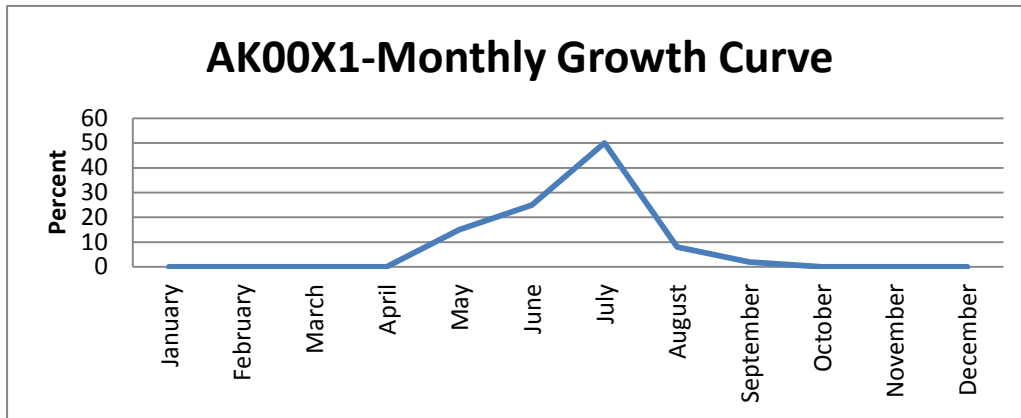
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31KT1—D31-Boreal moss organic depressions

D31TL1—D31-Boreal moss organic depressions

Characteristics of Representative Soil Components

Soil Classification: Dysic Hydric Cryofibrists

Dominant Parent Material: Mossy organic material over silty alluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Not applicable

Saturated Hydraulic Conductivity: Moderately high

AWC Total (cm): Low RV High
10 20 37

pH: Low RV High
3.4 5.9 7

Effective CEC (me/100g): Low High
22 40


CEC (me/100g): Min RV Max
7.5 34.8 62

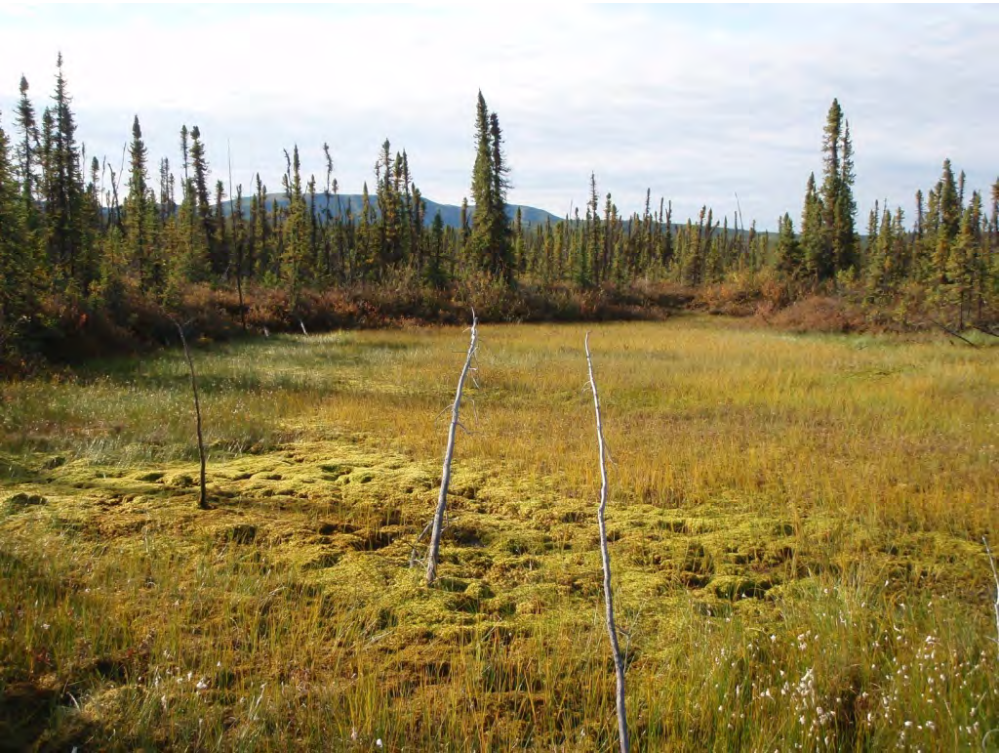
Organic Matter (percent): Low RV High
2 41 80


Bulk Density (1/3-Bar): Min RV Max
0.2 0.6 1.09

Plant Community Phases

| | | | |
|---|--|-------------|-----------|
| Ecological Site Description ID: | R231XY150AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is in depressions of plains and is attributed to a thermokarst event. The underlying permafrost melts, causing the ground to slump and form wet depressions. These depressions are stable, open water bodies with little or no hydrologic input. As a result, the succession is similar to that of a bog. With time and organic matter accumulation, permafrost eventually develops in the soil and the sites progress from open water to scrubland. If succession exceeds 150 years, as is presumed with thermokarst succession, the ecological sites are divided. Site R231XY150AK characterizes the first part of the thermokarst succession on plains, and site R231XY158AK characterizes as the second part of the thermokarst succession. Prior to the thermokarst event, the site likely resembles site R231XY128AK, which is a boreal tussock peat frozen plain community. The soils in community phase 1.1 are classified as Cryofibrists and are composed of organic material over silty alluvium.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div><div>Boreal moss peat plains</div><div>R231XY150AK</div><div><div><div>1.1 (HCPC) Sedge-<i>Sphagnum</i> moss herbaceous community</div><div>1.2a</div><div><div>1.2 (2KM) <i>Sphagnum riparium</i>-sedge herbaceous community</div><div>1.3a</div><div><div>1.3 (2KE) Open water-herbaceous community</div></div></div></div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>This ecological site characterizes the first half of the thermokarst succession on plains. The vegetative community of phase 1.3 is emergent vegetation, that of phase 1.2 is a floating mat, and that of phase 1.1 is sedge meadow.</p> <p>The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Sedge-Sphagnum moss herbaceous community |
| Community Phase Narrative: | | | |
| <p>As compared to phases 1.2 and 1.3, phase 1.1 has trace amounts of pooled water and large amounts of surface organic matter that is likely from sedges. The dominant vegetation is graminoids, including <i>Carex</i> and <i>Eriophorum</i>. The graminoid cover is >60%. Phase 1.1 does not have a tree cover. Dwarf and low shrubs are present, but they make up minimal cover. The most common shrubs are <i>Vaccinium oxycoccos</i> and <i>Andromeda polifolia</i>. Sphagnum moss makes up substantial cover, but it is not a dominant plant. Lichen and forbs are minor vegetative components. Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | <p>The succession progresses and is described in the report for ecological site R231XY158AK. During the transition to site R231XY158AK, the sedges are replaced by Sphagnum moss and wetland shrubs.</p> | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Sphagnum riparium-sedge herbaceous community |
| Community Phase Narrative: | | | |
| <p>Pooled water covers 10% of this phase. Sphagnum moss is dominant. <i>Sphagnum riparium</i> is believed to be the dominant moss species. Phase 1.2 does not have a tree cover. Dwarf, low, and medium shrubs are present, but they make up minimal cover. The most common shrub is <i>Chamaedaphne calyculata</i>. Lichen and forbs are minor vegetative components. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Organic matter fills the depressions. Transitions from floating mat to soils without water layers. | | |

| | | | |
|---|--|-----------------------|---------------------------------|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Open water-herbaceous community |
| Community Phase Narrative: | | | |
| <p>Pooled water covers 85% of the area, which is an open body of water. The dominant vegetation is emergent moss, which is likely <i>Sphagnum riparium</i>. Shrubs and sedges are present, but they are minor vegetative components. Trees, lichen, and forbs were not observed. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Organic matter fills the depressions. Transitions from open water to depressions with a floating vegetative mat. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2KE



Rooting Depth (cm): Min RV Max
72 72 72

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
72 72 72

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.8 3.8 3.8

Subsurface Layer

Thickness (cm): Min RV Max
0 0 0

Texture: None recorded

AWC (cm/cm): Not measured

pH: Not measured

Influencing Water Features

NWI Code: PAB2

NWI Description: Palustrine, Aquatic Bed, Aquatic Moss

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 80-80 | 5-5 | 2-2 | 0-0 | 0-0 | 60-60 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-3 | --- | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-1 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ERAN6 | <i>Eriophorum angustifolium</i> | 10-10-10 | 100 | 31.6 |
| CAAQ | <i>Carex aquatilis</i> | 3-3-3 | 100 | 17.3 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 1-1-1 | 100 | 10.0 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 1-1-1 | 100 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—11-11-11

Community Phase 2KM



Rooting Depth (cm): Min RV Max
171 171 171

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
41 41 41

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.8 4.8 4.8

Subsurface Layer

Thickness (cm): Min RV Max
130 130 130

Texture: Silt loam, muck

AWC (cm/cm): Min RV Max
0.25 0.28 0.4

pH: Min RV Max
4.6 6 6.7

Influencing Water Features

NWI Code: PEM1

NWI Description: Palustrine, Emergent, Persistent

Rosgen Classification: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 95-95 | 5-5 | 0-0 | 0-0 | 0-0 | 10-10 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-5 | --- | --- | --- |
| SD (<8 inches) | --- | --- | 1-1 | --- |
| SL (8-36 inches) | --- | --- | 0.1-5 | --- |
| SM (3-10 feet) | --- | --- | 1-1 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERRU2 | <i>Eriophorum russeolum</i> | 15-15-15 | 100 | 38.7 |
| CALI7 | <i>Carex limosa</i> | 15-15-15 | 100 | 38.7 |
| CALO4 | <i>Carex loliacea</i> | 5-5-5 | 100 | 22.4 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| VAOX | <i>Vaccinium oxycoccos</i> | 1-1-1 | 100 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-5-5 | 100 | 22.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| BENA | <i>Betula nana</i> | 1-1-1 | 100 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—9-9-9

Community Phase HCPC



Rooting Depth (cm): Min RV Max
69 96 123

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
69 75 81

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.5 4.6 4.7

Subsurface Layer

Thickness (cm): Min RV Max
0 21 42

Texture: Silt loam

AWC (cm/cm): Min RV Max
0.24 0.25 0.25

pH: Min RV Max
4.8 5 5.1

Influencing Water Features

NWI Code: PAB2, PEM1

NWI Description: Palustrine, Emergent, Persistent

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 80-90 | 20-25 | 0-0 | 0-0 | 0-0 | 0-2 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-0.1 | --- | --- | --- |
| GT (>24 inches) | 55-55 | --- | --- | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------------|----------------------------------|------------------|-----------------------------|
| ERBR6 | <i>Eriophorum brachyantherum</i> | 60-60-60 | 50 | 54.8 |
| CAAQ | <i>Carex aquatilis</i> | 5-5-5 | 50 | 15.8 |
| CAREX | <i>Carex</i> | 2-2-2 | 50 | 10.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| CAUT | <i>Carex utriculata</i> | 55-55-55 | 50 | 52.4 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| VAOX | <i>Vaccinium oxycoccos</i> | 0-7.5-15 | 100 | 27.4 |
| ANPO | <i>Andromeda polifolia</i> | 5-5-5 | 50 | 15.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHCA2 | <i>Chamaedaphne calyculata</i> | 3-3-3 | 50 | 12.2 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Moose | Summer |

Notable Plants: None observed

Species Richness: Number of stops—2; Plant Species Per Stop (min-avg-max)—3-8-13

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Subalpine Scrub Loamy Drainages

Ecological Classification ID: R231XY152AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Swales of flood plains

Slope (percent): Min Max

1 20

Elevation (feet): Min Max

2,625 4,429

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

2 50

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

15 32

Mean Annual Air Temperature (°F): Low High

19 28

Monthly Data:

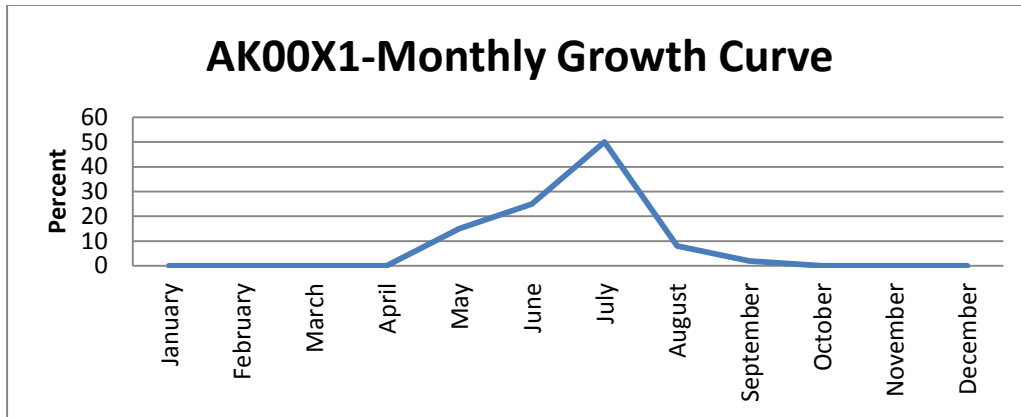
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

- D31TF1—D31-Subalpine scrub rocky drainages
- D31TF2—D31-Subalpine scrub rocky drainages
- D31UC5—D31-Subalpine scrub rocky drainages
- D31WA1—D31-Subalpine scrub rocky drainages

Characteristics of Representative Soil Components

Soil Classification: Sandy-skeletal, mixed Typic Cryaquents

Dominant Parent Material: Organic material over gravelly alluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Sandy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 11 18 27

pH: Low RV High
 4.6 6.2 8

Effective CEC (me/100g): Low High
 11.5 29


CEC (me/100g): Min RV Max
 2.9 24.7 88.2


Organic Matter (percent): Low RV High
 2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
 1.02 1.3 1.38

Plant Community Phases

| | | | |
|--|--|-------------|-----------|
| Ecological Site Description ID: | R231XY152AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This subalpine ecological site is in mountain drainageways at high elevations (850 to 1,250 meters). The soils do not have permafrost and are saturated. The soils in community phase 1.1 are classified as Cryaquents and are composed of gravelly alluvium. The site is characterized as willow scrubland directly adjacent to flowing water. Bare sand and gravel bars are common and indicative of phases linked to a flood regime. Bare sand and gravel bars are not present in some drainageways. The presence or absence of bars likely is a result of the severity of recent flood events. No alternate states were observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div><div>1. Reference State R231XY152AK</div><div><div>Subalpine scrub loamy drainages</div><div><div>1.1 (HCPC) Mixed willow-sedge-moss-scrubland</div><div><div>1.1a</div><div>↓</div></div><div><div>1.2 (2AE) Mixed willow-mixed herbaceous scrubland</div><div><div>↑</div><div>1.2 a</div></div></div></div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>For the climax phase, the dominant vegetation is a mixture of shrubs, graminoids, forbs, and moss. This site is characterized as scrubland, and the shrubs are dominantly in the tall, medium, and low shrub strata. Generally, as elevation increases, the dominant shrubs transition from tall to low species. The majority of the observed areas support dominantly medium shrub species.</p> <p>The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|--|--|-----------------------|-----------------------------------|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Mixed willow-sedge-moss-scrubland |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i> is present but at trace levels. Shrubs are the dominant vegetation, and they make up an estimated >50% cover. Shrubs are evenly distributed among the tall, medium, low, and dwarf shrub strata. Elevation likely affects the dominant shrub stratum. The most common tall and medium shrubs are <i>Salix alaxensis</i> and <i>Salix pulchra</i>. The most common low shrubs are <i>Betula glandulosa</i>, <i>Salix pulchra</i>, and <i>Dasiphora fruticosa</i>. Graminoids are abundant, commonly exceeding 25% cover, and are a mixture of grasses and sedges. The most common species are <i>Calamagrostis canadensis</i>, <i>Carex aquatilis</i>, and <i>Carex bigelowii</i>. The diversity of forbs is high, but no individual species is dominant. Moss is an abundant ground cover. Thirteen observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Flood event that scours drainage surface and/or deposits fresh alluvial material. As compared to the climax phase community, early flood phase communities have much more exposed mineral soil, likely due to recent flood events. | | |

| | | | |
|--|--|-----------------------|---|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Mixed willow-mixed herbaceous scrubland |
| Community Phase Narrative: | | | |
| <p>As compared to the climax phase community, the early flood phase has less shrub, graminoid, forb, and moss cover. Shrubs are the dominant vegetation. Shrubs are primarily in the medium and low shrub strata, and common species are <i>Salix bebbiana</i>, <i>Salix pulchra</i>, <i>Salix alaxensis</i>, and <i>Dasiphora fruticosa</i>. Common graminoid and forb species are <i>Calamagrostis canadensis</i>, <i>Carex sp.</i>, <i>Equisetum sp.</i>, and <i>Chamerion latifolium</i>. Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Normal time and growth without flooding. | | |

Dynamic Soil Properties within Representative Rooting Depth
Community Phase 2AE



Rooting Depth (cm): Min RV Max
27 40.5 54

Restrictive Features: None recorded

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 1.5 3

Texture: Cobbly silt loam

AWC (cm/cm): Min RV Max
0.18 0.18 0.19

pH: Min RV Max
5.1 5.8 6.5

Subsurface Layer

Thickness (cm): Min RV Max
27 39 51

Texture: Very cobbly coarse sand, very stony sandy loam

AWC (cm/cm): Min RV Max
0.03 0.07 0.11

pH: Min RV Max
5.4 5.6 5.8

Influencing Water Features

NWI Code: R3UB1

NWI Description: Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel

Rosgen Classification: Moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-10 | 30-35 | 3-15 | 0-0 | 2-10 | 40-50 | 10-10 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 1-3 | --- | --- | --- |
| FD (<4 inches) | --- | 1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.01-0.01 | --- | --- |
| SD (<8 inches) | --- | --- | 1-3 | --- |
| SL (8-36 inches) | --- | --- | 2-7 | --- |
| SM (3-10 feet) | --- | --- | 20-20 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CAPO | <i>Carex podocarpa</i> | 5-5-5 | 50 | 15.8 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-2.5-4 | 100 | 15.8 |
| CABI5 | <i>Carex bigelowii</i> | 3-3-3 | 50 | 12.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| EQVA | <i>Equisetum variegatum</i> | 1-3-5 | 100 | 17.3 |
| MOLA6 | <i>Moehringia lateriflora</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| SARE2 | <i>Salix reticulata</i> | 1-2-3 | 100 | 14.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 3-6.5-10 | 100 | 25.5 |
| SAPS | <i>Salix pseudomonticola</i> | 5-5-5 | 50 | 15.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-2.5-3 | 100 | 15.8 |
| SABE2 | <i>Salix bebbiana</i> | 3-3-3 | 50 | 12.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| SABE2 | <i>Salix bebbiana</i> | 20-20-20 | 50 | 31.6 |
| SAALA | <i>Salix alaxensis</i> var. <i>alaxensis</i> | 15-15-15 | 50 | 27.4 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Willows | Moose | Summer |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—11-15.5-20

Community Phase HCPC



Rooting Depth (cm): Min RV Max
-8 43.3 103

Restrictive Features: None recorded

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 7.6 45

Texture: Peat, silt, silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.25 0.33 0.35

pH: Min RV Max
4.7 6.1 7.8

Subsurface Layer

Thickness (cm): Min RV Max
-8 35.8 58

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Texture: Cobbly silt loam, gravelly silt loam, very cobbly coarse sand, extremely cobbly coarse sand, silt loam, coarse sandy loam, sandy loam, very stony coarse sandy loam, very stony silt loam, very stony sandy loam

AWC (cm/cm): Min RV Max
0.02 0.14 0.25

pH: Min RV Max
4.9 6.4 8

Influencing Water Features

NWI Code: PSS1, R3UB1, R4SB3, R4SB4

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel; Riverine, Intermittent, Stream Bed, Cobble-Gravel; Riverine, Intermittent, Stream Bed, Sand

Rosgen Classification: Steep, entrenched, cascading step-pools; moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-25 | 5-75 | 5-55 | 0-12 | 0-40 | 0-20 | 0-35 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 3-3 | --- | --- | --- |
| GT (>24 inches) | 10-15 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-3 | --- | --- |
| FM (4-24 inches) | --- | 0.01-8 | --- | --- |
| FT (>24 inches) | --- | 10-5 | --- | --- |
| SL (8-36 inches) | --- | --- | 10-10 | --- |
| SM (3-10 feet) | --- | --- | 1-1 | --- |
| ST (>10 feet) | --- | --- | 70-70 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 3-13.1-35 | 54 | 26.6 |
| CAAQ | <i>Carex aquatilis</i> | 2-19.7-50 | 23 | 21.3 |
| CAPO | <i>Carex podocarpa</i> | 1-9.8-15 | 31 | 17.3 |
| FEAL | <i>Festuca altaica</i> | 5-11-20 | 23 | 15.9 |
| CACA4 | <i>Calamagrostis canadensis</i> | 30-30-30 | 8 | 15.2 |
| CARO7 | <i>Carex rotundata</i> | 15-15-15 | 8 | 10.7 |
| POPO9 | <i>Poa porsildii</i> | 15-15-15 | 8 | 10.7 |
| CAREX | <i>Carex</i> | 1-4-10 | 23 | 9.6 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------------|---------------------------------|------------------|----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 12-22.3-30 | 23 | 22.7 |
| POPO9 | <i>Poa porsildii</i> | 20-20-20 | 8 | 12.4 |
| CACA12 | <i>Carex capillaris</i> | 15-15-15 | 8 | 10.7 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------------|---------------------------------|------------------|----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 0-4.4-10 | 54 | 15.4 |
| BORI2 | <i>Boykinia richardsonii</i> | 0-6-15 | 23 | 11.8 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------------|---------------------------------|------------------|----------------------------|
| ACDE2 | <i>Aconitum delphiniifolium</i> | 5-5.5-6 | 15 | 9.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------------|---------------------------------|------------------|----------------------------|
| SARE2 | <i>Salix reticulata</i> | 1-9.6-25 | 69 | 25.7 |
| DROC | <i>Dryas octopetala</i> | 0-7-20 | 38 | 16.4 |
| EMNI | <i>Empetrum nigrum</i> | 1-3.1-5 | 62 | 13.9 |
| SACH | <i>Salix chamissonis</i> | 3-7-15 | 23 | 12.7 |
| VAUL | <i>Vaccinium uliginosum</i> | 4-9.5-15 | 15 | 12.1 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 0-2.8-10 | 46 | 11.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 10-18.8-30 | 31 | 24.0 |
| B EGL | <i>Betula glandulosa</i> | 7-10.4-15 | 38 | 20.0 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-4.2-10 | 62 | 16.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| SAGL | <i>Salix glauca</i> | 10-30-60 | 23 | 26.3 |
| SAPU15 | <i>Salix pulchra</i> | 2-13.4-25 | 38 | 22.7 |
| SAAL | <i>Salix alaxensis</i> | 2-31-60 | 15 | 21.8 |
| B EGL | <i>Betula glandulosa</i> | 1-13-25 | 15 | 14.1 |
| SABE2 | <i>Salix bebbiana</i> | 5-12.5-20 | 15 | 13.9 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 15-15-15 | 8 | 10.7 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------------------|---------------------------------|------------------|----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 70-70-70 | 8 | 23.2 |
| SAAL | <i>Salix alaxensis</i> | 20-30-40 | 15 | 21.5 |
| SAALA | <i>Salix alaxensis var. alaxensis</i> | 18-19-20 | 15 | 17.1 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | | | Summer |
| Slight use | Forbs, ferns, and | Other | Unknown |
| Slight use | Grasses and sedges | Caribou | Summer |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | Moose | Summer |
| Slight use | Willows | Moose | Unknown |
| Slight use | Willows | Moose | Winter |

Notable Plants: *Poa porsildii*

Species Richness: Number of stops—13; plant species per stop (min-avg-max)—9-26.2-47

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Scrub Peat Plains

Ecological Classification ID: R231XY158AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Thermokarst depressions of loess plains

Slope (percent): Min Max

0 2

Elevation (feet): Min Max

1,312 2,001

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

2 40

Flooding: None

Ponding: Frequency Duration

Rare Brief

Runoff: Negligible

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

11 15

Mean Annual Air Temperature (°F): Low High

27 28

Monthly Data:

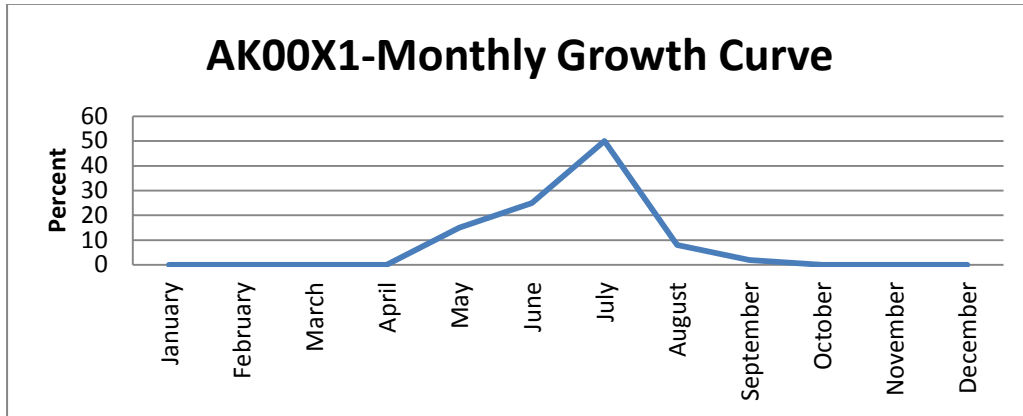
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31KT1—D31-Boreal scrub-sedge organic depressions

Characteristics of Representative Soil Components

Soil Classification: Loamy, dysic Terric Cryofibrists

Dominant Parent Material: Mossy organic material over silty alluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Loamy

Saturated Hydraulic Conductivity: Moderately high

AWC Total (cm): Low RV High
15 30 57

pH: Low RV High
3.4 5.2 5.4

Effective CEC (me/100g): Low High
21.2 40

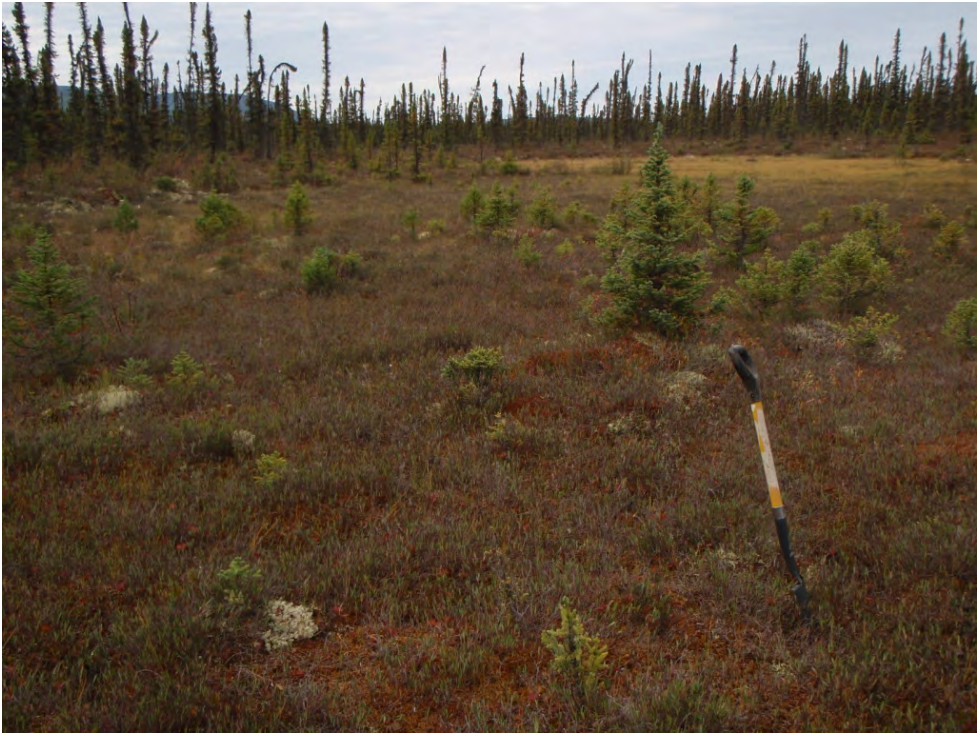
CEC (me/100g): Min RV Max
10 36 62


Organic Matter (percent): Low RV High
2 41 80

Bulk Density (1/3-Bar): Min RV Max
0.3 0.7 1.15

Plant Community Phases

| | | | |
|--|--|-------------|-----------|
| Ecological Site Description ID: | | R231XY158AK | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is on depressions of plains and is attributed to a thermokarst event. The underlying permafrost melts, causing the ground to slump and form wet depressions. These depressions are stable, open bodies of water with little or no hydrologic input. As a result, the succession is similar to that of a bog. With time and organic matter accumulation, permafrost eventually reforms in the soil and the site progresses from open water to scrubland. If succession exceeds 150 years, as is presumed with the thermokarst succession, the ecological sites are divided. Ecological site R231XY150AK characterizes the first part of the thermokarst succession on plains, and site R231XY158AK characterizes the second part of the thermokarst succession. Prior to the thermokarst event, the site likely resembles ecological site R231XY128AK. The soils in community phase 1.1 are classified as Cryofibrists and are composed of organic material over silty alluvium.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div><div>Boreal scrub peat frozen plains</div><div>R231XY158AK</div></div><div><div><div>1.1 (HCPC) Bog rosemary-leatherleaf-<i>Sphagnum</i> moss scrubland</div><div>1.2a</div><div>1.2 (2KE) <i>Sphagnum</i> moss-sedge herbaceous community</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>This ecological site characterizes the second half of the thermokarst succession on plains. The vegetative community of phase 1.2 is <i>Sphagnum</i> moss meadow and that of phase 1.1 is scrubland.</p> <p>The height of stunted and regenerative trees is defined as less than 15 feet. The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Bog rosemary-leatherleaf-Sphagnum moss scrubland |
| Community Phase Narrative: | | | |
| <p>This phase is dominantly low scrubs. Stunted and regenerative <i>Picea mariana</i> is a minor vegetative component. Dwarf and low shrubs are present, and the most common shrubs are <i>Andromeda polifolia</i> and <i>Chamaedaphne calyculata</i>. Graminoids, forbs, and lichen are present but as minor vegetative components. Sphagnum moss makes up more than 90% cover. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | <p>With time and absence of thermokarst, the climax phase might transition to ecological site R231XY128AK.</p> | | |

| | | | |
|---|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Sphagnum moss-sedge herbaceous community |
| Community Phase Narrative: | | | |
| <p>This phase is dominantly Sphagnum moss, which is estimated to make up more than 95% cover. Trees are not present. The shrub cover is limited, and the most common species are <i>Chamaedaphne calyculata</i> and <i>Andromeda polifolia</i>. Graminoids are a major component of the vegetation (40% cover) and are a mixture of <i>Carex</i> and <i>Eriophorum</i>. <i>Comarum palustre</i> is the only forb observed, but it is a minor vegetative component. Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Phase 1.2 is similar to phase 1.1 of ecological site R231XY150AK, but it differs in that Sphagnum moss is dominant. As a result, phase 1.2 has less overall sedge cover and litter. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2KE



Rooting Depth (cm): Min RV Max
70 70 70

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
79 79 79

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3 3.7 4.3

Subsurface Layer

Thickness (cm): Min RV Max
0 0 0

Texture: Muck

AWC (cm/cm): None recorded

pH: None recorded

Influencing Water Features

NWI Code: PEM1, PML1

NWI Description: Palustrine, Emergent, Persistent; Palustrine, Moss-Lichen, Moss

Rosgen Classification: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 99-100 | 5-15 | 0-0 | 0-0 | 0-0 | 1-2 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-5 | --- | --- | --- |
| FD (<4 inches) | --- | 6-6 | --- | --- |
| SD (<8 inches) | --- | --- | 0.01-5 | --- |
| SL (8-36 inches) | --- | --- | 3-3 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 35-35-35 | 50 | 41.8 |
| CALI7 | <i>Carex limosa</i> | 35-35-35 | 50 | 41.8 |
| CAAQ | <i>Carex aquatilis</i> | 15-15-15 | 50 | 27.4 |
| CASA10 | <i>Carex saxatilis</i> | 5-5-5 | 50 | 15.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| COPA28 | <i>Comarum palustre</i> | 6-6-6 | 50 | 17.3 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| ANPO | <i>Andromeda polifolia</i> | 5-5-5 | 50 | 15.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHCA2 | <i>Chamaedaphne calyculata</i> | 0.1-1.6-3 | 100 | 12.4 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—7-8.5-10

Community Phase HCPC



Rooting Depth (cm): Min RV Max
40 40 40

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
54 54 54

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.4 4.4 4.4

Subsurface Layer

Thickness (cm): Min RV Max
0 0 0

Texture: Muck

AWC (cm/cm): None recorded

pH: None recorded

Influencing Water Features

NWI Code: PSS1

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-5 | 95-95 | 2-2 | 1-1 | 0-0 | 0-0 | 1-1 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-10 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-0.1 | --- |
| SL (8-36 inches) | --- | --- | 40-5 | --- |
| TR (<15 feet) | --- | --- | --- | 3-3 |
| TS (<15 feet) | --- | --- | --- | 0.1-1 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CALI7 | <i>Carex limosa</i> | 10-10-10 | 100 | 31.6 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| ANPO | <i>Andromeda polifolia</i> | 40-40-40 | 100 | 63.2 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-5-5 | 100 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 3-3-3 | 100 | 17.3 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 1-1-1 | 100 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—24-24-24

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Subalpine Scrub-Tussock Loamy Frozen Hummock

Ecological Classification ID: R231XY185AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Turf hummocks on mountains and hills, mountains

Slope (percent): Min Max

1 35

Elevation (feet): Min Max

2,625 4,429

Range of Aspect Direction: Southwest to northeast (clockwise)

Water Table Depth (cm): Min Max

2 40

Flooding: None

Ponding: None

Runoff: High

Frost-Free Days: Min Max

50 80

Mean Annual Precipitation (inches): Low High

11 32

Mean Annual Air Temperature (°F): Low High

19 28

Monthly Data:

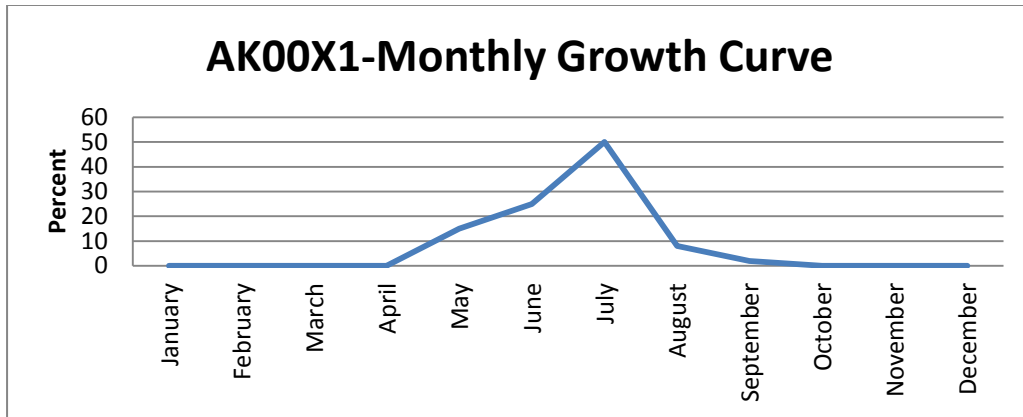
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 3 | -35 | 14 |
| February | 0 | 1 | -29 | 18 |
| March | 0 | 2 | -20 | 28 |
| April | 0 | 2 | -6 | 48 |
| May | 0 | 2 | 21 | 64 |
| June | 1 | 5 | 30 | 72 |
| July | 1 | 6 | 34 | 75 |
| August | 1 | 6 | 30 | 70 |
| September | 1 | 5 | 19 | 55 |
| October | 1 | 3 | -2 | 34 |
| November | 0 | 4 | -18 | 14 |
| December | 0 | 3 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31MT3—D31-Subalpine tussock-scrub loamy colluvial slopes, frozen
 D31TF1—D31-Subalpine tussock-scrub loamy colluvial slopes, frozen
 D31TF2—D31-Subalpine tussock-scrub loamy colluvial slopes, frozen
 D31UC5—D31-Subalpine tussock-scrub loamy colluvial slopes, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, acid, subgelic Typic Histoturbels

Dominant Parent Material: Organic material over loess over loamy cryoturbate

Representative Surface Texture: Peat

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to high

AWC Total (cm): Low RV High
 15 27 44

pH: Low RV High
 3.5 5.4 6.6

Effective CEC (me/100g): Low High
 12.2 37.8


CEC (me/100g): Min RV Max
 6.6 25 62


Organic Matter (percent): Low RV High
 2 22.5 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 1 1.34

Plant Community Phases

| | | | |
|---|---|-------------|-----------|
| Ecological Site Description ID: | R231XY185AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This subalpine ecological site is at high elevations on footslopes of mountains and hills (slope >20%; elevation 850 to 1,250 meters). The site is characterized as scrubland covering hummocky terrain. It is similar to site R231XY148AK, but this site has permafrost and is on footslopes of mountains and hills. The soils in community phase 1.1 are classified as Histoturbels and are composed of organic matter over gravelly cryoturbate.</p> <p>Fire is believed to result in unique plant communities in this ecological site. Evidence of fire within the soil profile is difficult to obtain due to a lack of coarse charcoal, which is more evident in soils that support coniferous forests. No alternate states were observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div>Subalpine scrub loamy frozen hummock</div><div>R231XY185AK</div><div><div>1.1 (HCPC) Scrub birch-mixed ericaceous scrub-sedge-moss scrubland</div><div>1.1a</div><div>1.2 a</div><div>1.2 (2FE) Mixed dwarf scrub-sedge-moss dwarf scrubland</div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>In the climax phase, the dominant vegetation is a mixture of shrubs, graminoids, and moss. Trees, forbs, and lichen are minimal vegetative components. The shrubs are dominantly in the medium, low, and dwarf shrub strata. Generally, as elevation increases, the dominant shrubs transition from medium to dwarf species. The majority of areas observed support dominantly low shrub species.</p> <p>The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|--|--|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Scrub birch-mixed ericaceous scrub-sedge-moss scrubland |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i> and <i>Picea mariana</i> are present but generally in trace amounts. Shrubs commonly are in the medium, low, and dwarf shrub strata. The most common medium shrub is <i>Betula glandulosa</i>. The most common low shrubs are <i>Betula glandulosa</i>, <i>Ledum palustre</i>, and <i>Vaccinium uliginosum</i>. The most common dwarf shrubs are <i>Empetrum nigrum</i> and <i>Vaccinium vitis-idaea</i>. Sedges are the most common graminoids, and the most common species are <i>Carex bigelowii</i> and <i>Eriophorum vaginatum</i>. Lichen and forbs are minor vegetative components. Moss makes up more than 50% cover, and it is a mixture of feathermoss and Sphagnum moss.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | <p>Low-intensity fire. The soils are wet and generally have a thick organic mat (>15 cm. thick). The typical disturbance regime is low-severity fires. During a low-severity burn, some shrubs and graminoids quickly recolonize and become dominant as a result of the below-ground root reserves that are not consumed in the fire event.</p> | | |

| | | | |
|--|--|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Mixed dwarf scrub-sedge-moss dwarf scrubland |
| Community Phase Narrative: | | | |
| <p>After fire, shrub species primarily are in the dwarf stratum. The most common shrubs are <i>Vaccinium uliginosum</i> and <i>Salix pulchra</i>. As compared to the climax phase, the graminoid cover is more abundant and the most common species is <i>Carex bigelowii</i>. Forbs and lichen are minor vegetative components. Moss makes up more than 50% cover and is a mixture of feathermoss and Sphagnum moss. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Normal time and growth without fire. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
57 57 57

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
29 29 29

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
5.2 5.2 5.2

Subsurface Layer

Thickness (cm): Min RV Max
28 28 28

Texture: Very stony coarse sandy loam

AWC (cm/cm): Min RV Max
0.11 0.11 0.12

pH: Min Avg Max
6.1 6.1 6.1

Influencing Water Features

NWI Code: PSS1

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous

Rosgen Classification: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-45 | 40-75 | 15-30 | 0-2 | 0-2 | 0-0 | 0-3 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.01-70 | --- | --- | --- |
| FD (<4 inches) | --- | 1-1 | --- | --- |
| FM (4-24 inches) | --- | 0.01-1 | --- | --- |
| SD (<8 inches) | --- | --- | 1-5 | --- |
| SL (8-36 inches) | --- | --- | 3-3 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 15-55-80 | 100 | 74.2 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 15-15-15 | 33 | 22.4 |
| POARA2 | <i>Poa arctica</i> ssp. <i>arctica</i> | 5-5-5 | 33 | 12.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 18-18-18 | 33 | 24.5 |
| CAREX | <i>Carex</i> | 5-5-5 | 33 | 12.9 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 5-16-25 | 100 | 40.0 |
| SARE2 | <i>Salix reticulata</i> | 35-35-35 | 33 | 34.2 |
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | 6-10.3-15 | 100 | 32.1 |
| SAPU15 | <i>Salix pulchra</i> | 30-30-30 | 33 | 31.6 |
| EMNI | <i>Empetrum nigrum</i> | 4-6.3-10 | 100 | 25.2 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-5.7-7 | 100 | 23.8 |
| BENA | <i>Betula nana</i> | 15-15-15 | 33 | 22.4 |
| DROC | <i>Dryas octopetala</i> | 10-10-10 | 33 | 18.3 |
| RUCH | <i>Rubus chamaemorus</i> | 1-2.5-4 | 67 | 12.9 |
| VAOX | <i>Vaccinium oxycoccos</i> | 4-4-4 | 33 | 11.5 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 3-6.5-10 | 67 | 20.8 |
| ALVIF | <i>Alnus viridis</i> ssp. <i>fruticosa</i> | 4-4-4 | 33 | 11.5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 11-11-11 | 33 | 19.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 3-3-3 | 33 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|--------------------|
| Slight use | | | Spring |
| Unknown | | | Not grazed/browsed |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—19-23.3-29

Community Phase HCPC



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
5 60 145

Restrictive Feature: Permafrost

Drainage Class: Poorly drained

Surface Layer

Thickness (cm): Min RV Max
5 24.3 77

Texture: Peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.3 4.3 5.5

Subsurface Layer

Thickness (cm): Min RV Max
0 35.7 68

Texture: Bouldery loam, gravelly silt loam, gravelly sandy loam, permanently frozen silt loam, channery loam, loam, silt loam, moderately decomposed plant material, sandy loam, extremely stony coarse sand, fine sandy loam

AWC (cm/cm): Min RV Max
0.02 0.2 0.38

pH: Min RV Max
5 5.6 6.3

Influencing Water Features

NWI Code: PSS1

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-40 | 25-85 | 10-55 | 0-10 | 0-2 | 0-5 | 0-10 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-7 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.01-7 | --- | --- |
| SD (<8 inches) | --- | --- | 15-7 | --- |
| SL (8-36 inches) | --- | --- | 15-7 | --- |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CABI5 | <i>Carex bigelowii</i> | 1-16.9-50 | 88 | 38.6 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 5-24.4-65 | 47 | 33.9 |
| CACA4 | <i>Calamagrostis canadensis</i> | 1-4.1-15 | 53 | 14.8 |
| FEAL | <i>Festuca altaica</i> | 0.1-7.5-20 | 24 | 13.3 |
| FEBR | <i>Festuca brachyphylla</i> | 5-9.3-15 | 18 | 12.8 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 20-20-20 | 6 | 10.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 1-5.8-10 | 24 | 11.6 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 0.1-3-7 | 29 | 9.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 2-10.4-25 | 82 | 29.3 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-8.4-15 | 100 | 29.0 |
| RUCH | <i>Rubus chamaemorus</i> | 0.1-5.3-10 | 53 | 16.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 10-12.5-15 | 12 | 12.1 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 20-20-20 | 6 | 10.8 |
| SARE2 | <i>Salix reticulata</i> | 1-4.5-10 | 24 | 10.3 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 15-27.9-45 | 71 | 44.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 1-18.8-65 | 88 | 40.7 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-14.9-35 | 82 | 35.0 |
| SAPU15 | <i>Salix pulchra</i> | 1-10.3-25 | 76 | 28.1 |
| BENA | <i>Betula nana</i> | 20-27.5-35 | 12 | 18.0 |
| SPST3 | <i>Spiraea stevenii</i> | 0-7.5-15 | 12 | 9.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 55-58.3-60 | 18 | 32.1 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|---------------------------|
| <i>Picea glauca</i> | 50-64-77 | 3.9-5-6 | 17-22-28 | 2 | B |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Other woody plants | Other | Unknown |
| Slight use | Willows | | Unknown |
| Slight use | Willows | Caribou | Unknown |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—17; plant species per stop (min-avg-max)—11-28.3-48

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Scrub Gravelly Drainages

Ecological Classification ID: R231XY195AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Drainageways of terraces, mountains, low flood plains, and hills

Slope (percent): Min Max
3 20

Elevation (feet): Min Max
1,007 3,182

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max
5 45

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max
75 110

Mean Annual Precipitation (inches): Low High
9 15

Mean Annual Air Temperature (°F): Low High
23 28

Monthly Data:

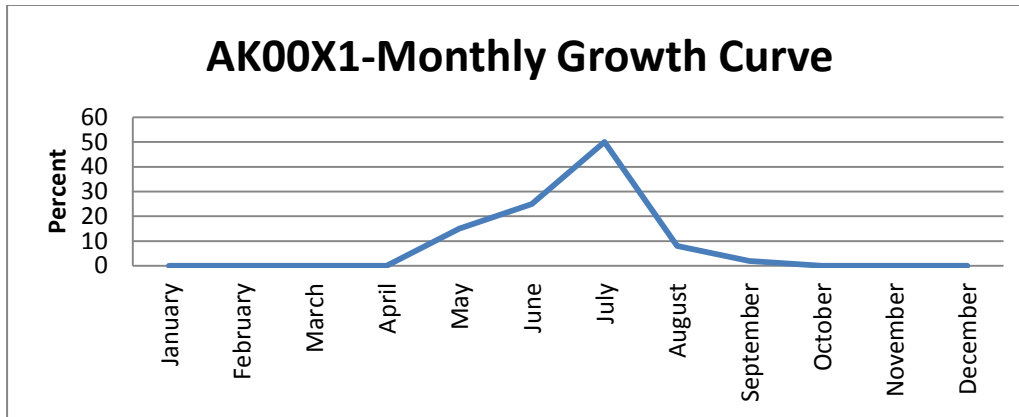
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31TE1—D31-Boreal forest silty drainages, frozen

D31TE2—D31-Boreal forest silty drainages, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Fluvaquentic Aquorthels

Dominant Parent Material: Organic material over gravelly alluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 15 30 47

pH: Low RV High
 4.5 6.4 7.9

Effective CEC (me/100g): Low High
 14 29

CEC (me/100g): Min RV Max
 3.2 31.8 88.2


Organic Matter (percent): Low RV High
 2 29.3 80

Bulk Density (1/3-Bar): Min RV Max
 1 1.1 1.17


Plant Community Phases

| | | | |
|---|---|-------------|-----------|
| Ecological Site Description ID: | R231XY195AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is a low-gradient drainageway that dissected hills, mountains, and plains. (<15% slopes). The site is characterized by a dense shrub canopy growing directly adjacent to flowing water. Trees were present, but the climax phase lacks sufficient tree cover to qualify as woodland (<10% tree cover). Because the drainageways do not have unvegetated bars, flooding is not included as a disturbance regime. Fire is the dominant disturbance regime. The soils in community phase 1.1 are classified as Cryofluvents and are composed of organic material over gravelly alluvium. Fire is a disturbance regime that resulted in three phases. No alternate states were observed.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1. Reference State</div><div>Boreal scrub gravelly drainages</div><div>R231XY195AK</div><div><div><div>1.1(HCPC) Alder-mixed willow-white spruce-grass-horsetail-moss scrubland</div><div>1.2b↑</div><div>1.2 (2FL) Alder-mixed willow-grass-scrubland</div><div>1.2a↓</div><div>1.3 (2FE) mixed grass-mixed forb herbaceous community</div><div>1.3b↑</div><div>1.1a→</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>In the climax phase, the dominant vegetation is a mixture of trees, shrubs, graminoids, forbs, and moss. The trees are in the tall, medium, stunted, and regenerative strata. The shrubs are in the tall, medium, low, and dwarf strata. The climax and late phase communities are very similar, but they are separated based on the size/age of trees.</p> <p>During a low-severity fire, minimal proportions of the organic mat are consumed and mineral soils typically are not exposed. Graminoids and scrubs quickly recolonize and become dominant as a result of below-ground root reserves that were not consumed in the fire event. Because black spruce has semi-serotinous cones, it quickly reestablishes after fire events.</p> <p>During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> | | |

| | |
|--|---|
| | The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches. |
|--|---|

| | | | |
|--|--|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Alder-mixed willow-white spruce-grass-horsetail-moss scrubland |
| Community Phase Narrative: | | | |
| <p>The tree cover is primarily in the tall and medium strata. The most common tree species is <i>Picea glauca</i>, but <i>Betula neoalaskana</i> and <i>Populus balsamifera</i> are also present. <i>Picea glauca</i> averages 90 years of age, and the diameter at breast height averages 5.7 inches. Medium shrubs are most abundant, but tall, low, and dwarf species are also common. The most common tall shrubs are <i>Alnus sp.</i> and <i>Salix sp.</i>, the most common medium shrubs are <i>Salix sp.</i>, and the most common low shrub is <i>Vaccinium uliginosum</i>. Graminoids and forbs are equally abundant, totaling more than 25% cover. A common graminoid is <i>Calamagrostis canadensis</i>, and common forbs are <i>Equisetum sp.</i> Moss makes up an abundant ground cover.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | High-intensity fire. No field observations. Under a high-severity fire regime, the community likely would be herbaceous. | | |

| | |
|------|---|
| 1.1b | Low-intensity fire. Evidence of fire exists in late fire phase (i.e., standing burned trees and charcoal). It is unclear whether a fire typically resets the community (high-intensity fire) or merely removes isolated pockets of shrubs and white spruce (low-intensity fire). Under a low-severity fire regime, the resulting community likely would resemble that of community phase 1.2. |
|------|---|

| | | | |
|---|---|-----------------------|------------------------------------|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Alder-mixed willow-grass-scrubland |
| Community Phase Narrative: | | | |
| <p>The tree cover is primarily in the medium and regenerative strata, and it is less abundant as compared to the climax phase. The dominant tree species are a mixture of <i>Picea glauca</i>, <i>Betula neoalaskana</i>, and <i>Populus balsamifera</i>. The dominant shrub stratum is tall shrubs, but medium, low, and dwarf shrubs are common. The most common tall shrubs are a mixture of <i>Alnus</i> and <i>Salix</i> sp. The most common medium and low shrubs are <i>Salix</i> sp. Graminoids and forbs are equally abundant, totally more than 25% cover. A common graminoid is <i>Calamagrostis canadensis</i>, and common forbs are <i>Equisetum</i> sp. and <i>Parnassia palustris</i>. As compared to the climax phase, the moss cover is less abundant.</p> | | | |

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| Community Pathways | |
|--------------------|---|
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire might occur within this phase, but it was not observed. |
| 1.2b | Normal time and growth without fire. The differences in the vegetation between the late and climax phases are minimal. As time progresses, the late phase community eventually supports a limited amount of tall <i>Picea glauca</i> and the shrub understory shifts from the tall to medium shrub stratum. |

| Phase 1.3 | No data. | | |
|---|-----------------------------|-----------------------|---|
| Community Phase Number: | 1.3 | Community Phase Name: | Mixed grass-mixed forb herbaceous community |
| Community Phase Narrative: | | | |
| No data. This phase is included because there is a theoretical chance for a fire event that removes the majority of the tree and shrub canopy. This community likely would be best characterized as herbaceous. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | No data. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FL



Rooting Depth (cm): Min RV Max
50 69.7 93

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
0 2.4 5

Texture: Fine sandy loam, silt loam, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.17 0.31 0.35

pH: Min RV Max
4.7 6.2 7.2

Subsurface Layer

Thickness (cm): Min RV Max
50 67.3 88

Texture: Gravelly silt loam, extremely cobbly sandy loam, very gravelly sandy loam

AWC (cm/cm): Min RV Max
0.03 0.14 0.35

pH: Min RV Max
5.2 6.6 7.6

Influencing Water Features

NWI Code: R3UB1, R3UB2

NWI Description: Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel; Riverine, Upper Perennial, Unconsolidated Bottom, Sand

Rosgen Classification: Steep, entrenched, cascading step-pools; moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-5 | 15-30 | 15-55 | 2-15 | 2-35 | 2-35 | 10-20 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.01-1 | --- | --- | --- |
| FD (<4 inches) | --- | 0.01-1 | --- | --- |
| FM (4-24 inches) | --- | 0.01-5 | --- | --- |
| SD (<8 inches) | --- | --- | 3-7 | --- |
| SL (8-36 inches) | --- | --- | 1-7 | --- |
| SM (3-10 feet) | --- | --- | 40-40 | --- |
| TR (<15 feet) | --- | --- | --- | 0.01-0.01 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 1-23-45 | 33 | 27.7 |
| CARO7 | <i>Carex rotundata</i> | 10-10-10 | 17 | 12.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 7-14.2-25 | 67 | 30.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| WIPH | <i>Wilhelmsia physodes</i> | 1-4.3-7 | 50 | 14.7 |
| EQSC | <i>Equisetum scirpoides</i> | 2-4-5 | 50 | 14.1 |
| RALA | <i>Ranunculus lapponicus</i> | 8-8-8 | 17 | 11.5 |
| CHAN9 | <i>Chamerion angustifolium</i> | 5-5-5 | 17 | 9.1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| EQPA | <i>Equisetum palustre</i> | 5-13.3-20 | 50 | 25.8 |
| PAPA8 | <i>Parnassia palustris</i> | 1-6.5-15 | 67 | 20.8 |
| EQAR | <i>Equisetum arvense</i> | 5-12.5-20 | 33 | 20.4 |
| RALA | <i>Ranunculus lapponicus</i> | 15-15-15 | 17 | 15.8 |
| HEAL | <i>Hedysarum alpinum</i> | 10-10-10 | 17 | 12.9 |
| CHLA13 | <i>Chamerion latifolium</i> | 0-4-8 | 33 | 11.6 |
| EQVA | <i>Equisetum variegatum</i> | 7-7-7 | 17 | 10.8 |
| MEPA | <i>Mertensia paniculata</i> | 5-5-5 | 17 | 9.1 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 7-7-7 | 17 | 10.8 |
| RUCH | <i>Rubus chamaemorus</i> | 5-5-5 | 17 | 9.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 7-9-10 | 50 | 21.2 |
| RIHU | <i>Ribes hudsonianum</i> | 15-15-15 | 17 | 15.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 15-15-15 | 17 | 15.8 |
| SAGL | <i>Salix glauca</i> | 10-10-10 | 17 | 12.9 |
| LEGR | <i>Ledum groenlandicum</i> | 1-2.3-3 | 50 | 10.8 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 0-2.5-5 | 33 | 9.1 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 0-2.5-5 | 33 | 9.1 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 5-5-5 | 17 | 9.1 |
| SAPS | <i>Salix pseudomonticola</i> | 5-5-5 | 17 | 9.1 |
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 17 | 9.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 5-22.5-40 | 33 | 27.4 |
| BEOC2 | <i>Betula occidentalis</i> | 1-5.5-10 | 33 | 13.5 |
| SARE2 | <i>Salix reticulata</i> | 10-10-10 | 17 | 12.9 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 10-10-10 | 17 | 12.9 |
| SAAR3 | <i>Salix arbusculoides</i> | 10-10-10 | 17 | 12.9 |
| SAPS | <i>Salix pseudomonticola</i> | 5-5-5 | 17 | 9.1 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 25-27.5-30 | 33 | 30.3 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 50-50-50 | 17 | 28.9 |
| SABE2 | <i>Salix bebbiana</i> | 5-10-15 | 50 | 22.4 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 5-12.5-20 | 33 | 20.4 |
| SAAL | <i>Salix alaxensis</i> | 20-20-20 | 17 | 18.3 |
| SAALA | <i>Salix alaxensis var. alaxensis</i> | 20-20-20 | 17 | 18.3 |
| SAAR3 | <i>Salix arbusculoides</i> | 15-15-15 | 17 | 15.8 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 2-3.5-5 | 33 | 10.8 |
| PIGL | <i>Picea glauca</i> | 0-2.5-5 | 33 | 9.1 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 1-4.7-10 | 50 | 15.3 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Moose | Summer |
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Unknown |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—10-20.5-29

Community Phase HCPC



Rooting Depth (cm): Min RV Max
32 63.5 97

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Surface Layer

Thickness (cm): Min RV Max
0 3.9 9

Texture: Highly organic silt loam, moderately decomposed plant material, peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.22 0.33 0.35

pH: Min RV Max
5.1 6.5 8.1

Subsurface Layer

Thickness (cm): Min RV Max
32 59.6 88

Texture: Very bouldery highly decomposed organic matter, gravelly sandy loam, very gravelly coarse sandy loam, very gravelly loamy coarse sand, channers, silt loam

AWC (cm/cm): Min RV Max
0.03 0.14 0.39

pH: Min RV Max
5.7 6.5 7.5

Influencing Water Features

NWI Code: PSS1, R2RS2, R3UB1, R3UB2, R3UB3

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; Riverine, Lower Perennial, Rocky Shore, Rubble; Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel; Riverine, Upper Perennial, Unconsolidated Bottom, Sand; Riverine, Upper Perennial, Unconsolidated Bottom, Mud

Rosgen Classification: Steep, entrenched, cascading step-pools; moderately entrenched, moderate gradient, riffle-dominant channel with infrequently spaced pools; low-gradient, meandering, riffle/pool stream with low W/D ratio and little deposition

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|------------------------------------|---|------------------|-------------------------------|----------------------|
| 0-5 | 10-95 | 1-80 | 1-20 | 0-85 | 0-35 | 0-20 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 20-5 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.1-2 | --- | --- |
| SD (<8 inches) | --- | --- | 10-30 | --- |
| SL (8-36 inches) | --- | --- | 40-40 | --- |
| SM (3-10 feet) | --- | --- | 10-45 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TT (>40 feet) | --- | --- | --- | 5-5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 10-10-10 | 10 | 10.0 |

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 4-14.1-20 | 70 | 31.5 |
| CAPO | <i>Carex podocarpa</i> | 25-25-25 | 10 | 15.8 |
| CAAQ | <i>Carex aquatilis</i> | 20-20-20 | 10 | 14.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 0-10-20 | 20 | 14.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| WIPH | <i>Wilhelmsia physodes</i> | 1-5.5-10 | 20 | 10.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| EQPA | <i>Equisetum palustre</i> | 25-27.5-30 | 20 | 23.5 |
| EQAR | <i>Equisetum arvense</i> | 1-12.8-20 | 40 | 22.6 |
| COPA28 | <i>Comarum palustre</i> | 15-15-15 | 10 | 12.2 |
| CHAN9 | <i>Chamerion angustifolium</i> | 1-5.5-10 | 20 | 10.5 |
| RALA | <i>Ranunculus lapponicus</i> | 10-10-10 | 10 | 10.0 |
| ACDE2 | <i>Aconitum delphiniifolium</i> | 10-10-10 | 10 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EMNI | <i>Empetrum nigrum</i> | 3-16.5-30 | 20 | 18.2 |
| RUCH | <i>Rubus chamaemorus</i> | 5-7.5-10 | 20 | 12.2 |
| ARRU | <i>Arctostaphylos rubra</i> | 10-10-10 | 10 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 1-10-40 | 70 | 26.5 |
| ROAC | <i>Rosa acicularis</i> | 0-3.8-7 | 40 | 12.3 |
| SAPU15 | <i>Salix pulchra</i> | 5-5-5 | 20 | 10.0 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 2-3-5 | 30 | 9.5 |

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Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-------------------------------------|---------------------------------|------------------|----------------------------|
| SAPU15 | <i>Salix pulchra</i> | 10-33-75 | 50 | 40.6 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 1-14-35 | 40 | 23.7 |
| SARI4 | <i>Salix richardsonii</i> | 45-45-45 | 10 | 21.2 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 1-12-20 | 30 | 19.0 |
| SABE2 | <i>Salix bebbiana</i> | 1-12-30 | 30 | 19.0 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 20-20-20 | 10 | 14.1 |
| PEFL15 | <i>Pentaphylloides floribunda</i> | 20-20-20 | 10 | 14.1 |
| SAGL | <i>Salix glauca</i> | 5-6.7-10 | 30 | 14.1 |
| BEOC2 | <i>Betula occidentalis</i> | 15-15-15 | 10 | 12.2 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-16-33 | 30 | 21.9 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 30-30-30 | 10 | 17.3 |
| SAIN3 | <i>Salix interior</i> | 10-10-10 | 20 | 14.1 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 20-20-20 | 10 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 0.1-2.9-5 | 70 | 14.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 3-4.3-5 | 30 | 11.4 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---------------------------|---------------------------------|------------------|----------------------------|
| PIGL | <i>Picea glauca</i> | 1-9.2-15 | 50 | 21.4 |
| BENE4 | <i>Betula neoalaskana</i> | 1-5.5-10 | 20 | 10.5 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement</u> Height |
|---------------------|--------------------|----------------------|----------------------|-------------------|------------------------------|
| <i>Picea glauca</i> | 33-92-182 | 1.4-6-16.4 | 5-31-79 | 17 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 30-40-60 | 3 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Severe use | Willows | Moose | Summer |
| Slight use | | | Spring |
| Slight use | Willows | Moose | Spring |
| Slight use | Willows | Moose | Summer |

Notable Plants: None observed

Species Richness: Number of stops—10; plant species per stop (min-avg-max)—9-17.8-25

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Scrub Sandy Floodplain, Low

Ecological Classification ID: R231XY198AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Low and middle flood plains

Slope (percent): Min Max

0 10

Elevation (feet): Min Max

650 889

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

0 0

Flooding: Frequency Duration

Frequent Brief

Ponding: None

Runoff: Low

Frost-Free Days: Min Max

75 110

Mean Annual Precipitation (inches): Low High

9 16

Mean Annual Air Temperature (°F): Low High

23 27

Monthly Data:

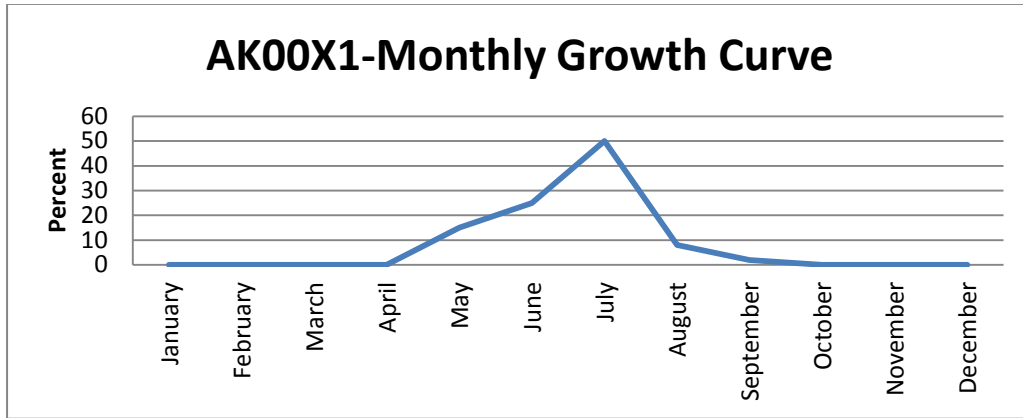
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31YV1—D31-Boreal scrub sandy low flood plains

D31YV8—D31-Boreal scrub sandy low flood plains

D31YV9—D31-Boreal scrub sandy low flood plains

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, calcareous Typic Cryofluvents

Dominant Parent Material: Loamy alluvium

Representative Surface Texture: Stratified loamy sand to sandy loam

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: High

AWC Total (cm): Low RV High

15 33 48

pH: Low RV High

6.9 7.6 8.3

Effective CEC (me/100g): Low High

10 12

CEC (me/100g): Min RV Max

2.1 2.1 2.1

Organic Matter (percent): Low RV High


2 2 2


Bulk Density (1/3-Bar): Min RV Max


1.23 1.3 1.38

Plant Community Phases

| | | | |
|---|--|-------------|-----------|
| Ecological Site Description ID: | R231XY198AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is in areas adjacent to the Yukon River that are frequently flooded. The soils in community phase 1.1 are classified as Cryofluvents and are composed of loamy and/or sandy alluvium. Although the duration of flooding is short enough to allow vegetation to grow on bars, the intensity of flooding hinders establishment of tree species and tends to lead to stands of alder and willow. As the site progresses from phase 1.3 to 1.1, less bare soil is exposed and surface plant litter increases. These changes are likely due to increases in vegetative cover. Ice damming disturbance is common on this ecological site, but it did not result in unique community phases.</p> <p>Areas of phase 1.3 that are underlain by loamier soils tend to support horsetail communities, and areas that are underlain by sandier soils tend to support mixed forb communities. Both soil types support similar vegetation in areas of phase 1.1.</p> <p>Flooding is a disturbance regime for this ecological site that results in three unique phases.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div>Boreal scrub sandy floodplain low</div><div>R231XY198AK</div><div><div><div>1.1 (HCPC) Feltleaf willow-thinleaf alder-horsetail-mixed herbaceous scrubland</div><div>1.2 (2AM) Feltleaf willow-mixed forb-mixed grass scrubland</div><div>1.3 (2AE) Mixed forb-mixed willow herbaceous community</div></div><div><div>1.2 b</div><div>1.2 a</div><div>1.3 a</div></div><div>1.1 a</div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state are grouped on the basis of the structure and dominance of forbs and shrubs, which are believed to be directly related to the duration and intensity of flooding and/or ice damming on bars adjacent to the Yukon River.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|---|--|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Feltleaf willow-thinleaf alder-horsetail-mixed herbaceous scrubland |
| Community Phase Narrative: | | | |
| <p>This phase is characterized by a closed canopy of alder and willow. <i>Picea glauca</i> and <i>Populus balsamifera</i> are present, but trees are a minor vegetative component. The majority of the shrub cover is in the tall and medium strata (total shrub cover ~140%). Common shrub species include <i>Salix interior</i>, <i>Alnus incana</i> spp. <i>Tenuifolia</i>, and <i>Salix alaxensis</i>. Graminoids are a minor vegetative component. Forbs are common (total forb cover ~60%). Common forbs include <i>Artemisia tilesii</i>, <i>Eurybia sibirica</i>, <i>Equisetum arvense</i>, and <i>Equisetum pratense</i>. Lichen and moss were not observed. Four observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Increased flood frequency, duration, and intensity and/or ice damming might shift the community from dominantly tall shrubs with a closed canopy to a sparse herbaceous community. | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Feltleaf willow-mixed forb-mixed grass scrubland |
| Community Phase Narrative: | | | |
| <p>This phase is characterized by open stands of willow. Seedlings of <i>Populus balsamifera</i> are common, but trees are considered a minor vegetative component. The majority of the shrub cover is in the medium stratum (total shrub cover ~60%). Common shrubs include <i>Salix alaxensis</i>, <i>Salix interior</i>, and <i>Salix pseudomonticola</i>. Graminoids are a minor vegetative component (~10% cover), but <i>Festuca rubra</i> and <i>Calamagrostis canadensis</i> are common species. Forbs are a dominant and diverse vegetative component (~50% cover), and common species include <i>Hedysarum alpinum</i>, <i>Equisetum</i> sp., <i>Argentina anserina</i>, <i>Astragalus bodinii</i>, <i>Artemisia tilesii</i>, and <i>Eurybia sibirica</i>. Lichen and moss were not observed. Nine observations of this phase were conducted.</p> <p>One sampled plot in this phase supported dominantly regenerating <i>Populus balsamifera</i> (60% cover). This might be the result of ice damming that severely disturbed an intact stand of balsam poplar trees.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Increased flood frequency, duration, and intensity and/or ice damming might shift the community from dominantly medium and tall shrubs with an open canopy to a sparse herbaceous community. | | |
| 1.2b | Normal time and growth. Flood disturbance is less frequent, and the community shifts from an open shrub community to a closed shrub community. | | |

| | | | |
|--|---|-----------------------|--|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Mixed forb-mixed willow herbaceous community |
| Community Phase Narrative: | | | |
| <p>This phase is characterized by sparse shrub and forb cover. <i>Populus balsamifera</i> is present, but trees are considered a minor vegetative component. The shrub cover is primarily in the medium and low strata (total shrub cover ~15%). Common shrubs include <i>Salix interior</i> and <i>Salix alaxensis</i>. Forbs are the most abundant vegetative component (~45% cover), and common species include an assortment of <i>Equisetum sp.</i>, <i>Hedysarum alpinum</i>, <i>Argentina anserina</i>, <i>Astragalus bodinii</i>, and <i>Artemisia tilesii</i>. Graminoids, lichen, and moss are minor vegetative components. Six observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Normal time and growth. Flood disturbance is less frequent, and the community shifts from a sparse forb community to an open shrub community. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2AE



Rooting Depth (cm): Min RV Max
 50 70.2 101

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 0 1 1

Texture: Extremely gravelly loamy sand, fine sandy loam, very fine sandy loam

AWC (cm/cm): Min RV Max
 0.02 0.15 0.25

pH: Min RV Max
 6.9 7.4 7.9

Subsurface Layer

Thickness (cm): Min RV Max
 50 69 100

Texture: Very gravelly coarse sandy loam, very fine sandy loam

AWC (cm/cm): Min RV Max
 0.11 0.15 0.25

pH: Min RV Max
 6.6 7.2 7.6

Influencing Water FeaturesNWI Code: R2UB2, R2UB3NWI Description: Riverine, Lower Perennial, Unconsolidated Bottom, Sand; Riverine, Lower Perennial, Unconsolidated Bottom, MudRosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point barsStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 0-20 | 1-70 | 0-3 | 20-99 | 0-50 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-20 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.1-35 | --- | --- |
| SL (8-36 inches) | --- | --- | 0.1-0.1 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| CAAQ | <i>Carex aquatilis</i> | 20-20-20 | 17 | 18.3 |
| CAST36 | <i>Calamagrostis stricta</i> | 5-5-5 | 17 | 9.1 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 17 | 9.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| ASBO | <i>Astragalus bodinii</i> | 10-10-10 | 17 | 12.9 |
| EQPA | <i>Equisetum palustre</i> | 5-5-5 | 17 | 9.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| EQUIS | <i>Equisetum</i> | 80-80-80 | 17 | 36.5 |
| EQHY | <i>Equisetum hyemale</i> | 2-16.8-35 | 67 | 33.4 |
| EQPA | <i>Equisetum palustre</i> | 0.1-12.6-25 | 33 | 20.5 |
| ARAN7 | <i>Argentina anserina</i> | 2-4.5-7 | 33 | 12.2 |
| HEAL | <i>Hedysarum alpinum</i> | 0-2.5-5 | 33 | 9.1 |
| PAPA8 | <i>Parnassia palustris</i> | 5-5-5 | 17 | 9.1 |

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Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| EQHY | <i>Equisetum hyemale</i> | 45-45-45 | 17 | 27.4 |
| ARTI | <i>Artemisia tilesii</i> | 6-6-6 | 17 | 10.0 |
| ACMIB | <i>Achillea millefolium</i> var. <i>borealis</i> | 5-5-5 | 17 | 9.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| SAIN3 | <i>Salix interior</i> | 1-12-30 | 50 | 24.5 |
| SAALL | <i>Salix alaxensis</i> var. <i>longistylis</i> | 5-10-15 | 33 | 18.3 |
| SAPS | <i>Salix pseudomonticola</i> | 5-5-5 | 17 | 9.1 |
| SAALA | <i>Salix alaxensis</i> var. <i>alaxensis</i> | 5-5-5 | 17 | 9.1 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|--|---------------------------------|------------------|----------------------------|
| SAIN3 | <i>Salix interior</i> | 30-30-30 | 17 | 22.4 |
| SAAL | <i>Salix alaxensis</i> | 8-8-8 | 17 | 11.5 |
| SAAR3 | <i>Salix arbusculoides</i> | 8-8-8 | 17 | 11.5 |
| SAALL | <i>Salix alaxensis</i> var. <i>longistylis</i> | 5-5-5 | 17 | 9.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 5-5-5 | 17 | 9.1 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | Moose | Summer |
| Unknown | | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—6; plant species per stop (min-avg-max)—4-10.5-17

Community Phase 2AM



Rooting Depth (cm): Min RV Max
 40 103 190

Restrictive Features: None recorded

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
 0 0 0

Texture: Fine sandy loam, sandy loam, very fine sandy loam

AWC (cm/cm): Min RV Max
 0.08 0.17 0.25

pH: Min RV Max
 6.9 7.5 8.1

Subsurface Layer

Thickness (cm): Min RV Max
 40 101 185

Texture: Very gravelly coarse sand, very cobbly loamy sand, sand, loamy fine sand, loamy sand, coarse sand, sandy loam, fine sandy loam

AWC (cm/cm): Min RV Max
 0.02 0.12 0.25

pH: Min RV Max
 7.2 7.7 8.1

Influencing Water Features

NWI Code: R2UB2

NWI Description: Riverine, Lower Perennial, Unconsolidated Bottom, Sand

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point bars

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 0-5 | 3-25 | 1-60 | 2-95 | 0-5 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 6-6 | --- | --- | --- |
| FM (4-24 inches) | --- | 1-9 | --- | --- |
| FT (>24 inches) | --- | 75-75 | --- | --- |
| SM (3-10 feet) | --- | --- | 1-5 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 0.1-13.7-40 | 33 | 21.4 |
| FESTU | <i>Festuca</i> | 5-15-25 | 22 | 18.3 |
| AGROP2 | <i>Agropyron</i> | 12-12-12 | 11 | 11.5 |
| CAREX | <i>Carex</i> | 10-10-10 | 11 | 10.5 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 4-4.7-6 | 33 | 12.5 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| ASBO | <i>Astragalus bodinii</i> | 5-15-25 | 22 | 18.3 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| EQPA | <i>Equisetum palustre</i> | 0.1-22-70 | 44 | 31.3 |
| EQAR | <i>Equisetum arvense</i> | 0.1-26.4-75 | 33 | 29.6 |
| EQHY | <i>Equisetum hyemale</i> | 0.1-25.7-75 | 33 | 29.3 |
| ARAN7 | <i>Argentina anserina</i> | 1-6.2-10 | 56 | 18.6 |
| EUSI13 | <i>Eurybia sibirica</i> | 0-4.6-7 | 56 | 16.0 |
| HEAL | <i>Hedysarum alpinum</i> | 1-4.2-8 | 44 | 13.7 |
| ASBO | <i>Astragalus bodinii</i> | 8-8.5-9 | 22 | 13.7 |
| SOCA6 | <i>Solidago canadensis</i> | 4-7-10 | 22 | 12.5 |
| ACSI | <i>Achillea sibirica</i> | 6-6-6 | 22 | 11.5 |
| AREGE | <i>Argentina egedii</i> ssp. <i>egedii</i> | 10-10-10 | 11 | 10.5 |
| ARTI | <i>Artemisia tilesii</i> | 0-1.8-5 | 56 | 10.1 |
| PAPA8 | <i>Parnassia palustris</i> | 0-2.7-6 | 33 | 9.4 |
| PLMA2 | <i>Plantago major</i> | 1-2.7-5 | 33 | 9.4 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| HEAL | <i>Hedysarum alpinum</i> | 35-55-75 | 22 | 35.0 |
| ARTI | <i>Artemisia tilesii</i> | 3-6-10 | 33 | 14.1 |
| CAYU | <i>Castilleja yukonis</i> | 15-15-15 | 11 | 12.9 |
| PAPA8 | <i>Parnassia palustris</i> | 8-8-8 | 11 | 9.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAIN3 | <i>Salix interior</i> | 20-20-20 | 11 | 14.9 |
| ROAC | <i>Rosa acicularis</i> | 10-10-10 | 11 | 10.5 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--|----------------------------------|------------------|-----------------------------|
| SAALL | <i>Salix alaxensis</i> var. <i>longistylis</i> | 1-13.3-45 | 78 | 32.1 |
| SAIN3 | <i>Salix interior</i> | 7-22.2-60 | 44 | 31.4 |
| SAALA | <i>Salix alaxensis</i> var. <i>alaxensis</i> | 5-17.2-45 | 56 | 30.9 |
| SAPS | <i>Salix pseudomonticola</i> | 3-7.6-15 | 78 | 24.3 |
| ALINT | <i>Alnus incana</i> ssp. <i>tenuifolia</i> | 5-8.3-15 | 67 | 23.6 |
| SAAL | <i>Salix alaxensis</i> | 20-20-20 | 11 | 14.9 |
| SAPS8 | <i>Salix pseudomyrsinites</i> | 1-4.2-8 | 44 | 13.7 |
| SALUL | <i>Salix lucida</i> ssp. <i>lasiandra</i> | 2-6-10 | 22 | 11.5 |
| ROAC | <i>Rosa acicularis</i> | 4-4.5-5 | 22 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 2-25-60 | 56 | 37.3 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Willows | Moose | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Unknown |
| Slight use | Willows | Moose | Winter |
| Unknown | | | Unknown |

Notable Plants: *Symphyotrichum falcatum* var. *falcatum*

Species Richness: Number of stops—9; plant species per stop (min-avg-max)—7-17.7-26

Community Phase HCPC



Rooting Depth (cm): Min RV Max
110 142 183

Restrictive Feature: Abrupt textural change

Drainage Class: Well drained

Surface Layer

Thickness (cm): Min RV Max
0 2 5

Texture: Stratified fine sandy loam, silt loam, very fine sandy loam

AWC (cm/cm): Min RV Max
0.17 0.23 0.25

pH: Min RV Max
7.6 8.1 8.5

Subsurface Layer

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Thickness (cm): Min RV Max
110 140 178

Texture: Very gravelly sand, fine sandy loam, very fine sandy loam

AWC (cm/cm): Min RV Max
0.02 0.17 0.25

pH: Min RV Max
7.5 7.9 8.3

Influencing Water Features

NWI Code: R2UB2

NWI Description: Riverine, Lower Perennial, Unconsolidated Bottom, Sand

Rosgen Classification: Low-gradient, meandering, alluvial riffle/pool channels with point bars

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-2 | 1-10 | 20-45 | 5-45 | 2-50 | 0-2 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 1-2 | --- | --- |
| FM (4-24 inches) | --- | 1-30 | --- | --- |
| SL (8-36 inches) | --- | --- | 5-5 | --- |
| ST (>10 feet) | --- | --- | 15-20 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 11-11-11 | 25 | 16.6 |
| CALAM | <i>Calamagrostis</i> | 11-11-11 | 25 | 16.6 |
| POA | <i>Poa</i> | 5-5-5 | 25 | 11.2 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| FERU2 | <i>Festuca rubra</i> | 30-30-30 | 25 | 27.4 |
| CACA4 | <i>Calamagrostis canadensis</i> | 10-10-10 | 25 | 15.8 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| ASBO | <i>Astragalus bodinii</i> | 7-7-7 | 25 | 13.2 |
| ARAN7 | <i>Argentina anserina</i> | 1-3-5 | 50 | 12.2 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|------------------------------|---------------------------------|------------------|----------------------------|
| EQAR | <i>Equisetum arvense</i> | 4-32-60 | 50 | 40.0 |
| EQPR | <i>Equisetum pratense</i> | 30-30-30 | 25 | 27.4 |
| EQPA | <i>Equisetum palustre</i> | 30-30-30 | 25 | 27.4 |
| EUSI13 | <i>Eurybia sibirica</i> | 1-2.8-5 | 100 | 16.6 |
| GABO2 | <i>Galium boreale</i> | 4-5-6 | 50 | 15.8 |
| CAYU | <i>Castilleja yukonis</i> | 5-5-5 | 25 | 11.2 |
| PAPA8 | <i>Parnassia palustris</i> | 2-2.5-3 | 50 | 11.2 |
| ARLA9 | <i>Artemisia laciniata</i> | 5-5-5 | 25 | 11.2 |
| ACSI | <i>Achillea sibirica</i> | 5-5-5 | 25 | 11.2 |
| ARAN7 | <i>Argentina anserina</i> | 4-4-4 | 25 | 10.0 |
| SOMU | <i>Solidago multiradiata</i> | 4-4-4 | 25 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| ARTI | <i>Artemisia tilesii</i> | 3-5-7 | 75 | 19.4 |
| COSE5 | <i>Corydalis sempervirens</i> | 10-10-10 | 25 | 15.8 |
| HEAL | <i>Hedysarum alpinum</i> | 10-10-10 | 25 | 15.8 |
| SANGU2 | <i>Sanguisorba</i> | 8-8-8 | 25 | 14.1 |
| ACMIB | <i>Achillea millefolium</i> var. <i>borealis</i> | 5-5-5 | 25 | 11.2 |
| ACSI | <i>Achillea sibirica</i> | 4-4-4 | 25 | 10.0 |
| CHANA2 | <i>Chamerion angustifolium</i> <i>ssp. angustifolium</i> | 4-4-4 | 25 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|-----------------------------|---------------------------------|------------------|----------------------------|
| ARRU | <i>Arctostaphylos rubra</i> | 4-4-4 | 25 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| COSES | <i>Cornus sericea</i> ssp. <i>sericea</i> | 4-4.5-5 | 50 | 15.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| COSES | <i>Cornus sericea</i> ssp. <i>sericea</i> | 25-25-25 | 25 | 25.0 |
| ROAC | <i>Rosa acicularis</i> | 5-12.5-20 | 50 | 25.0 |
| VIDE | <i>Viburnum edule</i> | 12-12-12 | 25 | 17.3 |
| SAIN3 | <i>Salix interior</i> | 8-8-8 | 25 | 14.1 |
| SAPS8 | <i>Salix pseudomyrsinites</i> | 5-5-5 | 25 | 11.2 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|---|---------------------------------|------------------|----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 18-39.5-80 | 100 | 62.8 |
| SAALL | <i>Salix alaxensis var. longistylis</i> | 5-23.8-40 | 100 | 48.7 |
| SAALA | <i>Salix alaxensis var. alaxensis</i> | 8-23.2-40 | 100 | 48.2 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 30-30-30 | 25 | 27.4 |
| SAIN3 | <i>Salix interior</i> | 5-10-15 | 75 | 27.4 |
| SAPS | <i>Salix pseudomonticola</i> | 7-11-15 | 50 | 23.5 |
| SAGL | <i>Salix glauca</i> | 20-20-20 | 25 | 22.4 |
| SABE2 | <i>Salix bebbiana</i> | 15-15-15 | 25 | 19.4 |
| SALUL | <i>Salix lucida ssp. lasiandra</i> | 5-5-5 | 25 | 11.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover</u> (Min-Avg-Max) | <u>Constancy</u> | <u>Occurrence</u> Index |
|---------------------|----------------------------|---------------------------------|------------------|----------------------------|
| POBA2 | <i>Populus balsamifera</i> | 6-10.5-15 | 50 | 22.9 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|--------------|--------------------------|---------------------------|---------------|
| Moderate use | Willows | Moose | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—12-19.8-35

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site

Ecological Classification Name: Boreal Graminoid Peat Terrace, Depression

Ecological Classification ID: R231XY199AK

Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Thermokarst depressions of terraces, terraces

Slope (percent): Min Max

0 1

Elevation (feet): Min Max

656 1,968

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max

0 20

Flooding: None

Ponding: Frequency Duration

Frequent Very long

Runoff: Negligible

Frost-Free Days: Min Max

75 110

Mean Annual Precipitation (inches): Low High

10 15

Mean Annual Air Temperature (°F): Low High

25 28

Monthly Data:

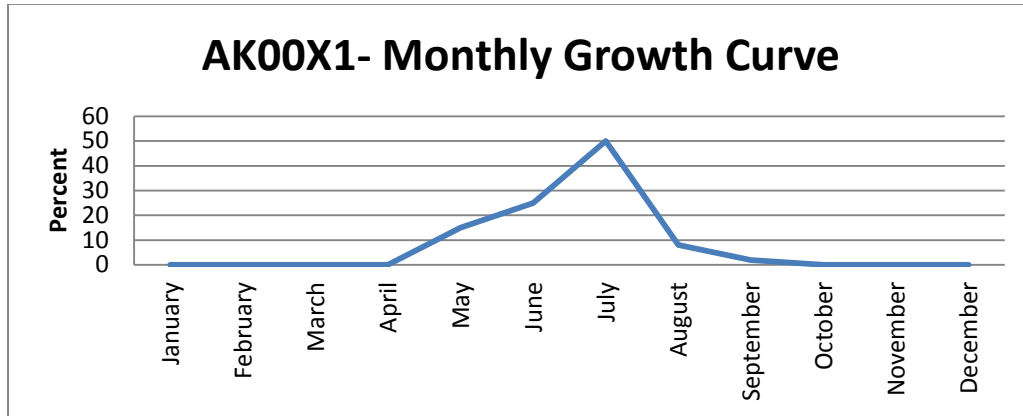
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 2 | -31 | 10 |
| February | 0 | 1 | -31 | 18 |
| March | 0 | 1 | -22 | 30 |
| April | 0 | 1 | 1 | 52 |
| May | 0 | 2 | 23 | 63 |
| June | 1 | 5 | 32 | 72 |
| July | 1 | 7 | 36 | 75 |
| August | 1 | 7 | 32 | 70 |
| September | 1 | 4 | 21 | 57 |
| October | 0 | 3 | 3 | 34 |
| November | 0 | 3 | -17 | 16 |
| December | 0 | 2 | -29 | 18 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D31TE1—D31-Boreal grass organic depressions

D31TE2—D31-Boreal grass organic depressions

D31YV3—D31-Boreal grass organic depressions

Characteristics of Representative Soil Components

Soil Classification: Dysic Hydric Cryofibrists

Dominant Parent Material: Mossy organic material over silty alluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Not applicable

Saturated Hydraulic Conductivity: Moderately high

AWC Total (cm): Low RV High

10 20 35

pH: Low RV High

3.4 5.7 7

Effective CEC (me/100g): Low High

21.5 40

CEC (me/100g): Min RV Max

10 36 62

Organic Matter (percent): Low RV High


2 41 80


Bulk Density (1/3-Bar): Min RV Max

0.2 0.7 1.15

Plant Community Phases

| | | | |
|---|---|-------------|-----------|
| Ecological Site Description ID: | R231XY199AK | | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is in spherical depressions of flood plain terraces and is attributed to a thermokarst event. The underlying permafrost melts, causing the ground to slump and form wet depressions. These depressions are stable, open bodies of water with little or no hydrologic input, and the succession is similar to that of a bog. With time and organic matter accumulation, the permafrost eventually reforms in the soil and the site progresses from open water to scrubland. Prior to the thermokarst, the site likely resembles ecological site R231XY169AK. Limited observations in the lowland thermokarst made conceptualization of the state and transition model difficult. It is believed that phases are expressions of the time since the thermokarst event, depth of the water table, amount of accumulated organic matter, and the presence or absence of permafrost. The soils in community phase 1.1 are classified as Cryofibrists and are composed of organic matter over silty alluvium.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div><div>Boreal graminoid peat terrace depression</div><div>R231XY199AK</div></div><div><div><div>1.1 (HCPC) Leatherleaf-bog rosemary-sedge-<i>Sphagnum</i> moss scrubland</div><div>↑ 1.2 a</div><div><div>1.2 (2KL) Sedge-leatherleaf-<i>Sphagnum</i> moss herbaceous community</div><div>↑ 1.3 a</div><div><div>1.3 (2KE) Sedge-horsetail herbaceous community</div></div></div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | The height of stunted and regenerative trees is defined as less than 15 feet. The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches. | | |

| | | | |
|--|---|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Leatherleaf-Bog Rosemary-Sedge-Sphagnum Moss Scrubland |
| Community Phase Narrative: | | | |
| <p>This community is thought to be the climax phase for this ecological site due to the presence of stunted <i>Picea mariana</i>, dominance of ericaceous scrubs, and limited amount of standing water. <i>Picea mariana</i> is present in trace amounts in the depressions. The shrubs are primarily in the low and dwarf strata (total shrub cover ~30%). Common shrubs include <i>Chamaedaphne calyculata</i>, <i>Andromeda polifolia</i>, and <i>Vaccinium oxycoccos</i>. Graminoids are abundant (~95% cover) and are an unknown <i>Carex</i> sp. Forbs and lichen are minor vegetative components. Sphagnum moss is an abundant ground cover. Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | With time and absence of thermokarst, the climax phase might transition to ecological site R231XY169AK. | | |

| | | | |
|--|---|-----------------------|--|
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Sedge-Leatherleaf-Sphagnum Moss Herbaceous Community |
| Community Phase Narrative: | | | |
| <p>This phase is characterized by abundant sedge and Sphagnum moss cover and a limited amount of ericaceous scrubs and standing water on the soil surface. Trees are not present. The shrubs are in the low and dwarf strata, but they make up limited cover (~15% cover). The most common shrub species are <i>Chamaedaphne calyculata</i>, <i>Andromeda polifolia</i>, and <i>Vaccinium oxycoccos</i>. Graminoids are abundant (~30% cover), and they include <i>Eriophorum sp.</i>, <i>Carex limosa</i>, and <i>Carex aquatilis</i>. Forbs and lichen are minor vegetative components. Sphagnum moss is an abundant ground cover (~90% cover). Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Normal time and growth. Organic matter increases. Ericaceous shrubs become a dominant vegetative component. | | |

| | | | |
|---|---|-----------------------|--------------------------------------|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Sedge-Horsetail Herbaceous Community |
| Community Phase Narrative: | | | |
| <p>This phase is characterized by an abundance of sedges, forbs, and standing water on soil surface. Trees are not present. Shrubs are a minor vegetative component. Graminoids are abundant (~40% cover), and they include <i>Carex aquatilis</i>, <i>Carex microchaeta</i>, <i>Carex tenuiflora</i>, and <i>Eriophorum angustifolium</i>. Forbs are abundant (~10% cover) and are primarily <i>Equisetum fluviatile</i>. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | <p>Normal time and growth. Organic matter accumulates, and standing water on the soil surface is reduced. The community transitions from cotton grass and horsetail species to an increased abundance of Sphagnum moss and ericaceous scrubs.</p> | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2KE



Rooting Depth (cm): Min RV Max
50 80 110

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
50 50 50

Texture: Peat

AWC (cm/cm): Min Avg Max
0.35 0.35 0.35

pH: Min RV Max
3.7 3.9 4.1

Subsurface Layer

Thickness (cm): Min RV Max
60 60 60

Texture: Mucky peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.1 4.3 4.5

Influencing Water Features

NWI Code: PEM1

NWI Description: Palustrine, Emergent, Persistent

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 60-60 | 50-50 | 0-0 | 0-0 | 0-0 | 40-40 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GD (<4 inches) | 5-5 | --- | --- | --- |
| GM (4-24 inches) | 15-15 | --- | --- | --- |
| FM (4-24 inches) | --- | 0.1-10 | --- | --- |
| FT (>24 inches) | --- | 0.1-0.1 | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-0.1 | --- |
| SL (8-36 inches) | --- | --- | 0.1-0.1 | --- |
| SM (3-10 feet) | --- | --- | 0.1-0.1 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ERAN6 | <i>Eriophorum angustifolium</i> | 5-5-5 | 100 | 22.4 |
| CATE5 | <i>Carex tenuiflora</i> | 5-5-5 | 100 | 22.4 |

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| CAMI4 | <i>Carex microchaeta</i> | 15-15-15 | 100 | 38.7 |
| CAAQ | <i>Carex aquatilis</i> | 15-15-15 | 100 | 38.7 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQFL | <i>Equisetum fluviatile</i> | 10-10-10 | 100 | 31.6 |

Site Tree Measurements: Not measured

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 0-0-0 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—12-12-12

Community Phase 2KL



Rooting Depth (cm): Min RV Max
16 83 150

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
16 48 80

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.7 3.9 4.1

Subsurface Layer

Thickness (cm): Min RV Max
0 41 82

Texture: Peat, water

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.1 4.3 4.5

Influencing Water Features

NWI Code: PSS1, PML1

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Deciduous; Palustrine, Moss-Lichen, Moss

Rosgen Classification: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 90-99 | 5-10 | 0-1 | 0-0 | 0-0 | 10-10 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 15-30 | --- | --- | --- |
| SD (<8 inches) | --- | --- | 0.1-0.1 | --- |
| SL (8-36 inches) | --- | --- | 0.1-5 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CALI7 | <i>Carex limosa</i> | 1-15.5-30 | 100 | 39.4 |
| ERIOP | <i>Eriophorum</i> | 15-15-15 | 50 | 27.4 |
| CAAQ | <i>Carex aquatilis</i> | 12-12-12 | 50 | 24.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| VAOX | <i>Vaccinium oxycoccos</i> | 0.1-4.1-8 | 100 | 20.1 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-5-5 | 50 | 15.8 |
| ANPO | <i>Andromeda polifolia</i> | 5-5-5 | 50 | 15.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHCA2 | <i>Chamaedaphne calyculata</i> | 10-10-10 | 50 | 22.4 |
| ANPO | <i>Andromeda polifolia</i> | 5-5-5 | 50 | 15.8 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Grasses and sedges | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—8-9-10

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 152 152 152

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 60 60 60

Texture: Peat

AWC (cm/cm): Min Avg Max
 0.35 0.35 0.35

pH: Min RV Max
 5 5 5

Subsurface Layer

Thickness (cm): Min RV Max
 0 60 120

Texture: Peat

AWC (cm/cm): Min Avg Max
 0.35 0.35 0.35

pH: Min RV Max
 5 5 5

Influencing Water Features

NWI Code: PML1

NWI Description: Palustrine, Moss-Lichen, Moss

Rosgen Classification: None recorded

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 0-0 | 30-60 | 3-12 | 0-0 | 0-3 | 0-0 | 12-20 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 95-95 | --- | --- | --- |
| FD (<4 inches) | --- | 2-2 | --- | --- |
| SD (<8 inches) | --- | --- | 1-4 | --- |
| SL (8-36 inches) | --- | --- | 15-3 | --- |
| TS (<15 feet) | --- | --- | --- | 4-4 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 65-65-65 | 50 | 57.0 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 5-41.7-95 | 150 | 79.1 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| DRRO | <i>Drosera rotundifolia</i> | 2-3-4 | 100 | 17.3 |
| TOPU | <i>Tofieldia pusilla</i> | 3-3-3 | 50 | 12.2 |
| LYAN2 | <i>Lycopodium annotinum</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| ANPO | <i>Andromeda polifolia</i> | 4-6-8 | 100 | 24.5 |
| VAOX | <i>Vaccinium oxycoccos</i> | 4-4-4 | 100 | 20.0 |
| RUCH | <i>Rubus chamaemorus</i> | 2-2.5-3 | 100 | 15.8 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-5-5 | 50 | 15.8 |
| MYGA | <i>Myrica gale</i> | 3-3-3 | 50 | 12.2 |
| BENA | <i>Betula nana</i> | 3-3-3 | 50 | 12.2 |
| LEGR | <i>Ledum groenlandicum</i> | 2-2-2 | 50 | 10.0 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-2-2 | 50 | 10.0 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 2-2-2 | 50 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHCA2 | <i>Chamaedaphne calyculata</i> | 15-15-15 | 50 | 27.4 |
| BENA | <i>Betula nana</i> | 3-3-3 | 50 | 12.2 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 4-4-4 | 50 | 14.1 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: *Malaxis paludosa*

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—12-13-14

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana/Vaccinium uliginosum-Ledum groenlandicum*

Ecological Classification ID: F232XY201AK

Major Land Resource Area: 232—Yukon Flats Lowlands

Physiographic Features

Landform: Loess plains, terraces

Slope (percent): Min Max
 0 8

Elevation (feet): Min Max
 1,033 1,690

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max
 0 25

Flooding: None

Ponding: Frequency Duration
 Frequent Very long

Runoff: Very low

Frost-Free Days: Min Max
 75 110

Mean Annual Precipitation (inches): Low High
 9 14

Mean Annual Air Temperature (°F): Low High
 23 27

Monthly Data:

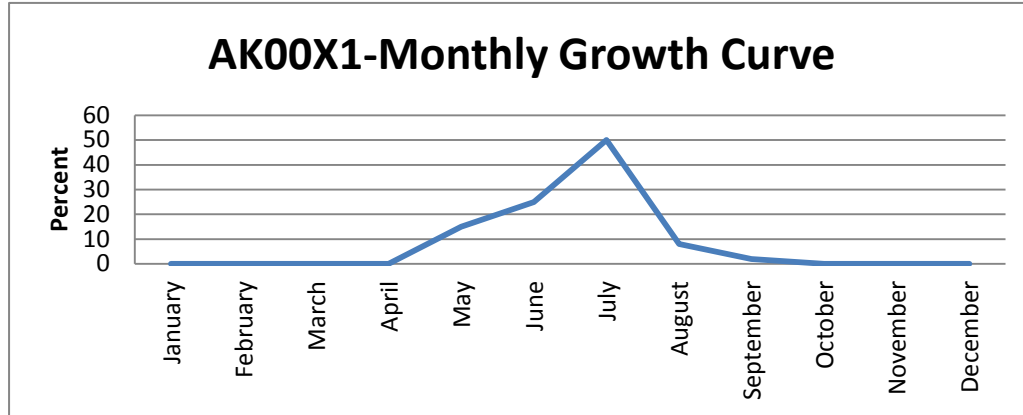
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 1 | -35 | 1 |
| February | 0 | 1 | -29 | 12 |
| March | 0 | 1 | -17 | 19 |
| April | 0 | 1 | 3 | 43 |
| May | 0 | 2 | 27 | 61 |
| June | 1 | 4 | 41 | 72 |
| July | 1 | 4 | 43 | 77 |
| August | 1 | 4 | 39 | 72 |
| September | 1 | 3 | 27 | 54 |
| October | 1 | 2 | 7 | 28 |
| November | 0 | 2 | -17 | 10 |
| December | 0 | 2 | -29 | 1 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D32TL1—D32-Boreal taiga organic plains, frozen

D32TL2—D32-Boreal taiga organic plains, frozen

D32TL4—D32-Boreal taiga organic plains, frozen

Characteristics of Representative Soil Components

Soil Classification: Loamy, mixed, euic, subgelic Terric Fibristels

Dominant Parent Material: Organic material over silty cryoturbate

Representative Surface Texture: Peat

Subsurface Texture Group: Loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
15 30 59

pH: Low RV High
3.4 5.5 6.5

Effective CEC (me/100g): Low High
16 40

CEC (me/100g): Min RV Max
10 27.3 62

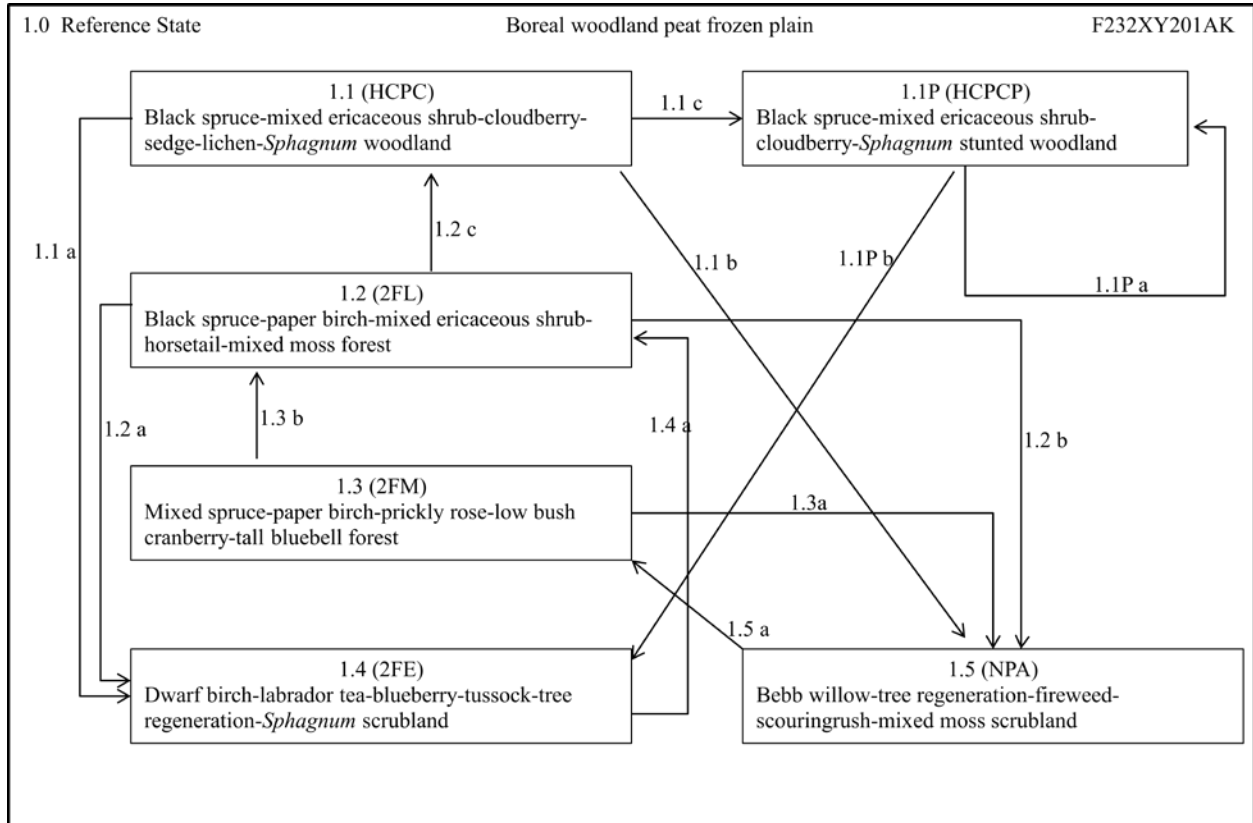
Organic Matter (percent): Low RV High
2 28 80

Bulk Density (1/3-Bar): Min RV Max
0.2 0.9 1.19

Plant Community Phases

| | |
|---|-------------|
| Ecological Site Description ID: | F232XY201AK |
| Ecological Dynamics of the Site: | |
| <p>This boreal ecological site is on loess plains, in all positions not related to thermokarst or drainages. The average slope is 4%, but slope ranges from 0 to 18%. As time elapses after a fire event and plant communities progress from community phase 1.5 to 1.1, the surface organic matter content increases and permafrost develops and/or rises in the soil profile. The soils in community phase 1.1 are classified as Fibristels and are composed of organic matter over silty cryoturbate.</p> <p>Fire resulted in six documented community phases. It is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. For this ecological site, low-severity fire events are more typical than high-severity fire events. The low-severity fire community phase (phase 1.4) and the high-severity fire community phase (phase 1.5) appear to differ in the depth of organic material on the soil surface, the presence and/or depth of permafrost, and the present and potential vegetation.</p> <p>It was presumed that sites devoid of fire for long periods of time eventually support dominantly a mat of Sphagnum moss. The organic material becomes so thick and has enough moisture that a fire event would not necessarily reset the community to an early fire sere (phase 1.4). Communities that support dominantly Sphagnum moss have a less productive black spruce forest and thus are considered post climax for this ecological site.</p> | |

State and Transition Diagram:



State and Transition
Diagram:

1

State Name:

Reference

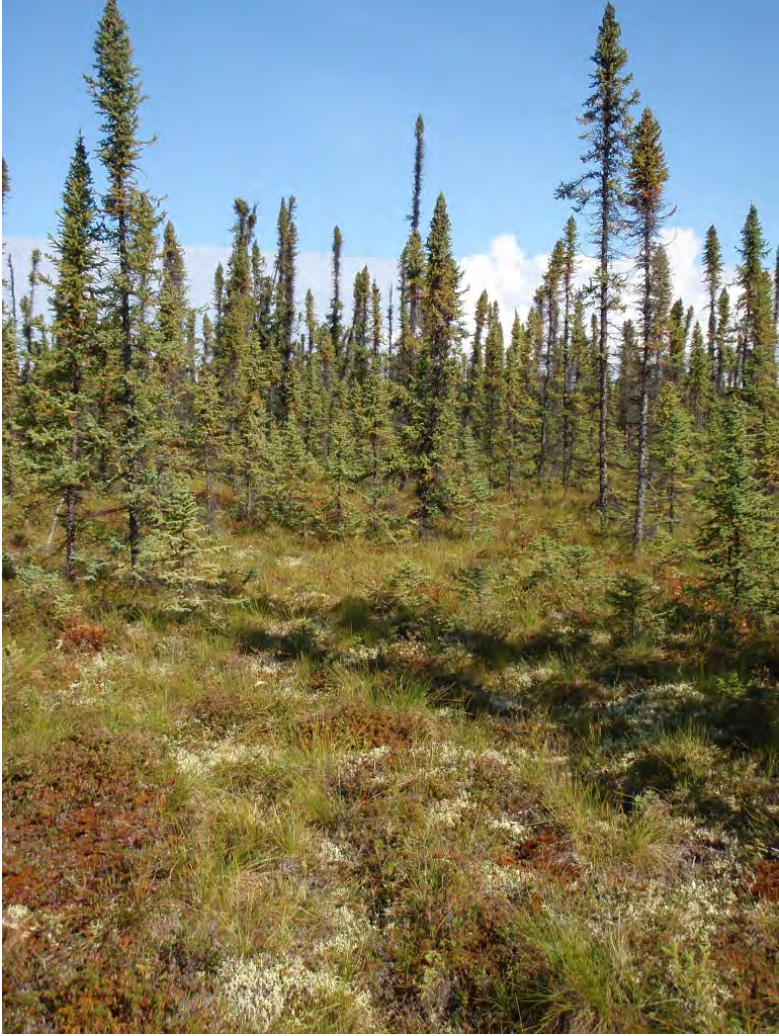
State Narrative:

Phases in the reference state were grouped on the basis of the structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the severity of the burn and the time since the last fire event.

During a low-severity fire (phase 1.4), minimal proportions of the organic mat are consumed and mineral soils typically are not exposed. Permafrost typically remains in the soil profile, and water commonly perches above it. Graminoids and scrubs quickly recolonize and become dominant as a result of below-ground root reserves that were not consumed in the fire event. Because black spruce has semi-serotinous cones, it quickly reestablishes after fire events. With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.2.

During a high-severity fire (phase 1.5), large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost commonly drops out of the soil profile, and the sites become drier. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow). With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.3.

| | |
|--|--|
| | <p>The fire return interval plays a substantial role in the structure of the observed forest. Longer fire return intervals favor development of community phases 1.1 and 1.1P, and shorter fire return intervals favor development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |
|--|--|

| | | | |
|-------------------------|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Black spruce-mixed ericaceous shrub-cloudberry-sedge-lichen-moss woodland |

| Community Phase Narrative: | |
|--|--|
| <p><i>Picea mariana</i> is the dominant tree species, and it is distributed among the medium, stunted, and regenerative tree strata (total mature tree cover ~20%; average age 124 years). <i>Betula neoalaskana</i> is present as a trace species. The shrub cover is primarily in the low and dwarf strata (total shrub cover ~70%), and common species are <i>Vaccinium uliginosum</i>, <i>Ledum palustre</i> ssp. <i>decumbens</i>, <i>Vaccinium vitis-idaea</i>, and <i>Rubus chamaemorus</i>. Graminoids generally are abundant (~30% cover), and common species are <i>Carex bigelowii</i> and <i>Eriophorum vaginatum</i>. Lichen (30% cover) and moss (30% cover) form an extensive ground cover. Common species include <i>Flavocetraria cucullata</i>, <i>Cladina</i> sp., <i>Cladonia</i> sp., <i>Sphagnum</i> sp., and <i>Hylocomium splendens</i>. Nine observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Low-severity fire. |
| 1.1b | High-severity fire. |
| 1.1c | Normal time and growth without fire. Black spruce forest becomes less productive, and the Sphagnum moss cover increases. Phase 1.1 is thought to have a shorter fire return interval than phase 1.1P and a longer fire return interval than phase 1.2. |

| | |
|------------|--|
| Phase 1.1P |  |
|------------|--|


Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska


| | | | |
|---|--|-----------------------|--|
| Community Phase Number: | 1.1P | Community Phase Name: | Black spruce-mixed ericaceous shrub-cloudberry-Sphagnum stunted woodland |
| Community Phase Narrative: | | | |
| <p>As compared to community phase 1.1, phase 1.1P has increased Sphagnum moss cover, reduced tree size and total cover of <i>Picea mariana</i>, and a thicker organic mat (average depth 70 cm. in phase 1.1P and 40 cm. in phase 1.1). <i>Picea mariana</i> is the dominant tree species, and the tree cover is primarily in the stunted tree stratum (total mature tree cover ~15%; average age 108 years). The shrub cover primarily is in the low and dwarf shrub strata (total shrub cover ~60%), and common species are <i>Vaccinium uliginosum</i>, <i>Chamaedaphne calyculata</i>, <i>Ledum palustre</i> ssp. <i>decumbens</i>, <i>Rubus chamaemorus</i>, <i>Vaccinium vitis-idaea</i>, and <i>Vaccinium oxycoccos</i>. Graminoids and forbs are minor vegetative components (<10% cover). Lichen (~20% cover) and <i>Sphagnum</i> sp. (~65% cover) form an extensive ground cover. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1Pa | Low-severity fire. Fire reduces the black spruce cover but does not dramatically alter the vegetative community. | | |
| 1.1Pb | High-severity fire. Fire may remove a significant portion of the Sphagnum moss mat, reverting the community back to the typical early fire sere. | | |


| | |
|-----------|--|
| Phase 1.2 |  |
|-----------|--|

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

| | | | |
|--|---|-----------------------|---|
| Community Phase Number: | 1.2 | Community Phase Name: | Black spruce-paper birch-mixed ericaceous shrub-horsetail-mixed moss forest |
| Community Phase Narrative: | | | |
| <p><i>Picea mariana</i> is the dominant tree species, and <i>Betula neoalaskana</i> is present in lower densities. The tree cover is primarily in the medium tree stratum (total mature tree cover ~40%; average age 80 years). The shrub cover primarily is in the low shrub stratum (total shrub cover ~100%), and common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Vaccinium uliginosum</i>, <i>Ledum groenlandicum</i>, <i>Rosa acicularis</i>, <i>Dasiphora fruticosa</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids (~15% cover) and forbs (~20% cover) are abundant, and common species include <i>Eriophorum vaginatum</i>, <i>Carex bigelowii</i>, and <i>Equisetum sylvaticum</i>. Lichen (20% cover) and moss (50% cover) form an extensive ground cover, and the most common species are <i>Cladina</i> sp., <i>Cladonia</i> sp., <i>Sphagnum</i> sp., <i>Hylocomium splendens</i>, and <i>Pleurozium schreberi</i>. Thirteen observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Low-severity fire. | | |
| 1.2b | High-severity fire. | | |
| 1.2c | Normal time and growth without fire. Paper birch disappears from the community, black spruce matures, and the overall shrub cover decreases. Phase 1.2 is thought to have a shorter fire return interval than that of phase 1.1 and a longer fire return interval than that of phase 1.4. | | |

| | | | |
|--|---|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Mixed spruce-paper birch-prickly rose-low bush cranberry-tall bluebell forest |
| Community Phase Narrative: | | | |
| <p><i>Betula neoalaskana</i> is the dominant tree species, and <i>Picea mariana</i> and <i>Picea glauca</i> are present at lower densities. The tree cover is primarily in the tall and medium tree strata (total mature tree cover ~105%; average age 63 years). The shrub cover primarily is in the tall and medium strata (total shrub cover ~50%), and common species include <i>Salix bebbiana</i>, <i>Rosa acicularis</i>, <i>Ribes triste</i>, <i>Vaccinium vitis-idaea</i>, and <i>Linnaea borealis</i>. Graminoids (~5% cover) and forbs (~20% cover) are common, including <i>Calamagrostis canadensis</i>, <i>Cornus canadensis</i>, <i>Mertensia paniculata</i>, and <i>Geocaulon lividum</i>. Lichen and moss are minor vegetative components. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | High-severity fire. Sites appear to typically revert back to community phase 1.5. This likely occurs due to the limited depth of organic material. | | |
| 1.3b | <p>Normal time and growth without fire. Organic material increases and permafrost migrates upward in the soil profile. Paper birch and white spruce are replaced by a maturing black spruce stand. Phase 1.3 is thought to have a shorter fire return interval than that of phase 1.1 and a longer fire return interval than that of phase 1.5.</p> <p>A long period without fire would be needed for this pathway to occur. This period is likely longer than the typical interval between fire events in Interior Alaska, which is approximately 100 years.</p> | | |

| | | | |
|---|--|-----------------------|---|
| Phase 1.4 |  | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Dwarf birch-Labrador tea-blueberry-tussock-tree regeneration-Sphagnum scrubland |
| Community Phase Narrative: | | | |
| <p><i>Picea mariana</i> and <i>Betula neoalaskana</i> are common (~10% cover) and are primarily in the regenerative tree stratum. Shrubs primarily are in the medium, low, and dwarf shrub strata (total shrub cover ~150%). The most common shrub species are <i>Betula glandulosa</i>, <i>Betula nana</i>, <i>Ledum palustre</i> spp. <i>decumbens</i>, <i>Vaccinium uliginosum</i>, <i>Vaccinium vitis-idaea</i>, and <i>Rubus chamaemorus</i>. Graminoids are abundant (~80% cover), and the most common species are <i>Eriophorum vaginatum</i> and <i>Carex bigelowii</i>. Moss is abundant (~35% cover), and the most common species is <i>Sphagnum</i>. Four observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.4a | Normal time and growth without fire. Black spruce and paper birch mature into a forest, and graminoids become less prevalent. This community is thought to result from a low-severity fire regime. | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.5 |  | | |
| Community Phase Number: | 1.5 | Community Phase Name: | Bebb willow-tree regeneration-fireweed-scouringrush-mixed moss scrubland |
| Community Phase Narrative: | | | |
| <p><i>Picea mariana</i> and <i>Betula neoalaskana</i> are common (~20% cover) and primarily are in the regenerative tree stratum. <i>Picea glauca</i> is also present in lower densities. Shrubs are evenly distributed among all shrub strata (total shrub cover ~110%), and common species include <i>Salix bebbiana</i>, <i>Rosa acicularis</i>, <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Ledum groenlandicum</i>, <i>Vaccinium uliginosum</i>, <i>Vaccinium vitis-idaea</i>, and <i>Linnaea borealis</i>. Forbs are abundant (~40% cover), and common species are <i>Chamerion angustifolium</i>, <i>Cerastium</i> sp., and <i>Equisetum scirpoides</i>. Moss is abundant (~20% cover), and common species include <i>Ceratodon purpureus</i> and <i>Polytrichum</i> sp. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.5a | Normal time and growth without fire. Paper birch, black spruce, and white spruce mature into a forest. This community is thought to result from a high-severity fire regime. | | |

Dynamic Soil Properties within Representative Rooting Depth
Community Phase NPA



Rooting Depth (cm): Min RV Max
 22 51 80

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
 8 10 12

Texture: Moderately decomposed plant material, peat

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 3.1 3.1 3.1

Subsurface Layer

Thickness (cm): Min RV Max
 14 41 68

Texture: Silt loam

AWC (cm/cm): Min RV Max
 0.25 0.25 0.25

pH: Min RV Max
 5.8 6.6 7.2

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-5 | 5-35 | 30-70 | 15-20 | 3-10 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 1-2 | --- | --- |
| FM (4-24 inches) | --- | 15-15 | --- | --- |
| FT (>24 inches) | --- | 4-4 | --- | --- |
| SD (<8 inches) | --- | --- | 4-6 | --- |
| SM (3-10 feet) | --- | --- | 7-8 | --- |
| ST (>10 feet) | --- | --- | 12-70 | --- |
| TR (<15 feet) | --- | --- | --- | 12-5 |
| TM (15-40 feet) | --- | --- | --- | 3-3 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 5-5-5 | 67 | 18.3 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 33 | 22.4 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 10-15-20 | 67 | 31.6 |
| CERAS | <i>Cerastium</i> | 1-1.7-2 | 100 | 12.9 |
| ORSE | <i>Orthilia secunda</i> | 3-3-3 | 33 | 10.0 |
| PEFR5 | <i>Petasites frigidus</i> | 3-3-3 | 33 | 10.0 |
| GABO2 | <i>Galium boreale</i> | 3-3-3 | 33 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQAR | <i>Equisetum arvense</i> | 25-25-25 | 33 | 28.9 |
| EQSC | <i>Equisetum scirpoides</i> | 15-15-15 | 33 | 22.4 |
| EQSY | <i>Equisetum arvense</i> | 8-8-8 | 33 | 16.3 |
| MEPA | <i>Mertensia paniculata</i> | 4-4-4 | 33 | 11.5 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 4-9-15 | 100 | 30.0 |
| POAL11 | <i>Polygonum alpinum</i> | 4-4-4 | 33 | 11.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 6-7.7-10 | 100 | 27.7 |
| ARRU | <i>Arctostaphylos rubra</i> | 15-15-15 | 33 | 22.4 |
| LIBO3 | <i>Linnaea borealis</i> | 4-4.5-5 | 67 | 17.3 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 80-80-80 | 33 | 51.6 |
| VAUL | <i>Vaccinium uliginosum</i> | 7-7-7 | 33 | 15.3 |
| RUID | <i>Rubus idaeus</i> | 5-5-5 | 33 | 12.9 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 7-16-25 | 67 | 32.7 |
| SABE2 | <i>Salix bebbiana</i> | 15-15-15 | 33 | 22.4 |
| LEGR | <i>Ledum groenlandicum</i> | 8-8-8 | 33 | 16.3 |
| RUID | <i>Rubus idaeus</i> | 7-7-7 | 33 | 15.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-5-5 | 33 | 12.9 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SABE2 | <i>Salix bebbiana</i> | 25-47.5-70 | 67 | 56.3 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 12-12-12 | 67 | 28.3 |
| SAGL | <i>Salix glauca</i> | 20-20-20 | 33 | 25.8 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 7-7-7 | 33 | 15.3 |
| LEGR | <i>Ledum groenlandicum</i> | 5-5-5 | 33 | 12.9 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 3-10-15 | 100 | 31.6 |
| BENE4 | <i>Betula neoalaskana</i> | 5-7.7-10 | 100 | 27.7 |
| PIGL | <i>Picea glauca</i> | 5-5-5 | 33 | 12.9 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 3-3-3 | 33 | 10.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other | Other | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—16-21-27

Community Phase 2FE



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
50 74 98

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
31 46 61

Texture: Mucky peat, peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.7 4.9 5.1

Subsurface Layer

Thickness (cm): Min RV Max
19 28 37

Texture: Permanently frozen silt, permanently frozen very fine sandy loam

AWC (cm/cm): Min RV Max
0.25 0.26 0.27

pH: Min RV Max
5.7 6.1 6.5

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-20 | 20-50 | 8-20 | 2-5 | 3-5 | 0-0 | 2-5 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 85-85 | --- | --- | --- |
| SD (<8 inches) | --- | --- | 10-8 | --- |
| SL (8-36 inches) | --- | --- | 15-55 | --- |
| TR (<15 feet) | --- | --- | --- | 4-4 |
| TS (<15 feet) | --- | --- | --- | 8-8 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 75-83.3-90 | 75 | 79.1 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERVA4 | <i>Eriophorum vaginatum</i> | 75-75-75 | 25 | 43.3 |
| CAREX | <i>Carex</i> | 2-10.7-20 | 75 | 28.3 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 8-14.5-20 | 100 | 38.1 |
| RUCH | <i>Rubus chamaemorus</i> | 3-9.2-18 | 100 | 30.4 |
| VAOX | <i>Vaccinium oxycoccos</i> | 2-5-10 | 75 | 19.4 |
| ANPO | <i>Andromeda polifolia</i> | 3-3.5-4 | 50 | 13.2 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 4-4-4 | 25 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 30-52.5-80 | 100 | 72.5 |
| B EGL | <i>Betula glandulosa</i> | 5-40-65 | 75 | 54.8 |
| VAUL | <i>Vaccinium uliginosum</i> | 4-9-20 | 100 | 30.0 |
| BENA | <i>Betula nana</i> | 15-15-15 | 50 | 27.4 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 15-15-15 | 25 | 19.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 55-55-55 | 25 | 37.1 |
| B EGL | <i>Betula glandulosa</i> | 20-20-20 | 25 | 22.4 |
| SAPU15 | <i>Salix pulchra</i> | 20-20-20 | 25 | 22.4 |
| BETUL | <i>Betula</i> | 7-9.5-12 | 50 | 21.8 |
| SAGL | <i>Salix glauca</i> | 15-15-15 | 25 | 19.4 |
| SALIX | <i>Salix</i> | 5-5-5 | 50 | 15.8 |
| BENA | <i>Betula nana</i> | 4-4-4 | 25 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 4-10.5-17 | 50 | 22.9 |
| PIMA | <i>Picea mariana</i> | 4-5.2-7 | 100 | 22.9 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-6.5-8 | 50 | 18.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|---------------------------|
| <i>Picea mariana</i> | 17-18-20 | 0.9-1-1.5 | 5-6-8 | 2 | G |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—17-20.2-22

Community Phase 2FM



Rooting Depth (cm): Min RV Max
56 114.5 173

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
5 11.5 18

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

0.35 0.35 0.35
 pH: Min RV Max
 3.7 4.6 5.3

Subsurface Layer

Thickness (cm): Min RV Max
 51 103 155

Texture: Permanently frozen silt loam, silt loam

AWC (cm/cm): Min RV Max
 0.25 0.25 0.25

pH: Min RV Max
 5.8 6.8 7.7

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-5 | 8-60 | 10-76 | 14-25 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 8-8 | --- | --- |
| FT (>24 inches) | --- | 5-5 | --- | --- |
| SD (<8 inches) | --- | --- | 4-4 | --- |
| SL (8-36 inches) | --- | --- | 4-4 | --- |
| ST (>10 feet) | --- | --- | 10-10 | --- |
| TR (<15 feet) | --- | --- | --- | 10-4 |
| TM (15-40 feet) | --- | --- | --- | 20-80 |
| TT (>40 feet) | --- | --- | --- | 5-5 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 5-5-5 | 33 | 12.9 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 10-10-10 | 33 | 18.3 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 8-8.5-9 | 67 | 23.8 |
| GELI2 | <i>Geocaulon lividum</i> | 4-4-4 | 33 | 11.5 |
| LYAL3 | <i>Lycopodium alpinum</i> | 4-4-4 | 33 | 11.5 |
| ORSE | <i>Orthilia secunda</i> | 3-3-3 | 33 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 15-15-15 | 33 | 22.4 |
| GELI2 | <i>Geocaulon lividum</i> | 3-3-3 | 33 | 10.0 |
| PYAS | <i>Pyrola asarifolia</i> | 3-3-3 | 33 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 5-5-5 | 67 | 18.3 |
| CHAN9 | <i>Chamerion angustifolium</i> | 4-4-4 | 33 | 11.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 3-4.3-6 | 100 | 20.8 |
| LIBO3 | <i>Linnaea borealis</i> | 3-5-7 | 67 | 18.3 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 4-4-4 | 33 | 11.5 |
| SPST3 | <i>Spiraea stevenii</i> | 3-3-3 | 33 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 10-32.5-55 | 67 | 46.5 |
| VIDE | <i>Viburnum edule</i> | 7-7-7 | 33 | 15.3 |
| RITR | <i>Ribes triste</i> | 7-7-7 | 33 | 15.3 |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 5-5-5 | 33 | 12.9 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| SABE2 | <i>Salix bebbiana</i> | 10-12.5-15 | 67 | 28.9 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 10-10-10 | 33 | 18.3 |
| SALIX | <i>Salix</i> | 10-10-10 | 33 | 18.3 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 5-8.3-10 | 100 | 28.9 |
| PIMA | <i>Picea mariana</i> | 4-12-20 | 67 | 28.3 |
| BENE4 | <i>Betula neoalaskana</i> | 5-5-5 | 33 | 12.9 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-35-80 | 100 | 59.2 |
| PIGL | <i>Picea glauca</i> | 10-21.7-30 | 100 | 46.5 |
| PIMA | <i>Picea mariana</i> | 10-15-20 | 67 | 31.6 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 5-45-85 | 67 | 54.8 |
| PIGL | <i>Picea glauca</i> | 5-12.5-20 | 67 | 28.9 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 31-63-128 | 1.9-7-15.4 | 30-48-81 | 7 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 73-85.8-112 | 3 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Other | Moose | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—16-20-23

Community Phase 2FL



Rooting Depth (cm): Min RV Max
25 55.3 88

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
16 21.8 34

Texture: Moderately decomposed plant material, peat, slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.2 4.3 5.5

Subsurface Layer

Thickness (cm): Min RV Max
9 33.5 54

Texture: Permanently frozen silt, permanently frozen silt loam, silt, loam, silt loam

AWC (cm/cm): Min RV Max
0.22 0.25 0.27

pH: Min RV Max
4.6 6 7.3

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 4-45 | 25-85 | 5-15 | 2-15 | 0-3 | 0-0 | 0-4 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-5 | --- | --- | --- |
| FM (4-24 inches) | --- | 10-2 | --- | --- |
| SD (<8 inches) | --- | --- | 3-6 | --- |
| SL (8-36 inches) | --- | --- | 18-8 | --- |
| SM (3-10 feet) | --- | --- | 5-8 | --- |
| TR (<15 feet) | --- | --- | --- | 25-25 |
| TS (<15 feet) | --- | --- | --- | 35-35 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 5-14.2-45 | 46 | 25.6 |
| ERIOP | <i>Eriophorum</i> | 10-18.3-30 | 23 | 20.6 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 2-10.7-20 | 23 | 15.7 |
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 15 | 15.2 |
| CALAM | <i>Calamagrostis</i> | 2-6-10 | 15 | 9.6 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PEFR5 | <i>Petasites frigidus</i> | 1-5.2-8 | 38 | 14.1 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 2-10.8-50 | 77 | 28.8 |
| GELI2 | <i>Geocaulon lividum</i> | 3-7-10 | 31 | 14.7 |
| PEFR5 | <i>Petasites frigidus</i> | 4-7-10 | 31 | 14.7 |

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Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 4-13.2-50 | 92 | 35.0 |
| RUCH | <i>Rubus chamaemorus</i> | 3-10-20 | 54 | 23.2 |
| VAOX | <i>Vaccinium oxycoccos</i> | 0.1-2.6-5 | 38 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 5-33.8-70 | 62 | 45.6 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 18-40.8-70 | 31 | 35.4 |
| VAUL | <i>Vaccinium uliginosum</i> | 4-11.3-20 | 77 | 29.5 |
| BENA | <i>Betula nana</i> | 0.1-8.8-18 | 31 | 16.4 |
| SPST3 | <i>Spiraea stevenii</i> | 0.1-5.4-10 | 46 | 15.7 |
| ROAC | <i>Rosa acicularis</i> | 1-6.2-10 | 38 | 15.4 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 8-11.7-25 | 54 | 25.1 |
| LEGR | <i>Ledum groenlandicum</i> | 80-80-80 | 8 | 24.8 |
| B EGL | <i>Betula glandulosa</i> | 6-12.7-20 | 23 | 17.1 |
| SAPU15 | <i>Salix pulchra</i> | 4-5.5-8 | 31 | 13.0 |
| ROAC | <i>Rosa acicularis</i> | 3-5.2-8 | 31 | 12.7 |
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 8 | 10.7 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 40-40-40 | 8 | 17.5 |
| BETUL | <i>Betula</i> | 35-35-35 | 8 | 16.4 |
| SABE2 | <i>Salix bebbiana</i> | 4-8.7-12 | 23 | 14.1 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 2-12.8-25 | 100 | 35.8 |
| BENE4 | <i>Betula neoalaskana</i> | 1-4.7-10 | 46 | 14.7 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 15-26.7-35 | 23 | 24.8 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 7-44.7-90 | 77 | 58.6 |
| BENE4 | <i>Betula neoalaskana</i> | 5-10-15 | 31 | 17.5 |

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Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|---------------------------|
| <i>Picea mariana</i> | 80-83-87 | 4.7-5-6.3 | 32-34-38 | 3 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 10-47.9-75 | 6 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Other woody plants | Other | Summer |
| Moderate use | Willows | Moose | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | | Moose | Unknown |
| Slight use | Other woody plants | Moose | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—13; plant species per stop (min-avg-max)—18-26-38

Community Phase HCPC



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
16 55 108

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
16 37 56

Texture: Mucky peat, peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.4

pH: Min RV Max
3.1 3.9 4.7

Subsurface Layer

Thickness (cm): Min RV Max
0 18 52

Texture: Permanently frozen silt, permanently frozen silt loam, permanently frozen sandy loam, silt, silt loam

AWC (cm/cm): Min RV Max
0.15 0.24 0.27

pH: Min RV Max
4.6 5.4 6.3

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 14-60 | 20-70 | 5-15 | 2-15 | 0-4 | 0-0 | 0-10 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 10-20 | --- | --- | --- |
| FD (<4 inches) | --- | 2-3 | --- | --- |
| SD (<8 inches) | --- | --- | 2-20 | --- |
| SL (8-36 inches) | --- | --- | 10-8 | --- |
| SM (3-10 feet) | --- | --- | 5-5 | --- |
| TR (<15 feet) | --- | --- | --- | 10-2 |
| TS (<15 feet) | --- | --- | --- | 35-35 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ERIOP | <i>Eriophorum</i> | 20-21-25 | 56 | 34.2 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 95-95-95 | 11 | 32.5 |
| CAREX | <i>Carex</i> | 2-11.7-20 | 67 | 27.9 |
| CALAM | <i>Calamagrostis</i> | 10-10-10 | 11 | 10.5 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 15-15-15 | 11 | 12.9 |
| GELI2 | <i>Geocaulon lividum</i> | 10-10-10 | 11 | 10.5 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-10.8-20 | 100 | 32.8 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 65-65-65 | 11 | 26.9 |
| RUCH | <i>Rubus chamaemorus</i> | 2-6.9-10 | 78 | 23.1 |
| VAOX | <i>Vaccinium oxycoccos</i> | 3-3.5-5 | 67 | 15.3 |
| EMNI | <i>Empetrum nigrum</i> | 3-10.5-18 | 22 | 15.3 |
| ARRU | <i>Arctostaphylos rubra</i> | 5-6-7 | 22 | 11.5 |
| ANPO | <i>Andromeda polifolia</i> | 3-5-7 | 22 | 10.5 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 4-4-4 | 22 | 9.4 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 10-20-45 | 56 | 33.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 2-11-20 | 78 | 29.2 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 15-25-30 | 33 | 28.9 |
| B EGL | <i>Betula glandulosa</i> | 4-8.8-20 | 56 | 22.1 |
| BENA | <i>Betula nana</i> | 4-7.8-15 | 56 | 20.8 |
| SAPU15 | <i>Salix pulchra</i> | 5-6.3-8 | 33 | 14.5 |
| ANPO | <i>Andromeda polifolia</i> | 2-5.7-10 | 33 | 13.7 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 10-10-10 | 11 | 10.5 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| SAGL | <i>Salix glauca</i> | 5-6.5-8 | 22 | 12.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-10.4-18 | 100 | 32.3 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 15-28.8-50 | 44 | 35.7 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 12-20.8-25 | 56 | 34.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea mariana</i> | 57-124-200 | 1.9-3-4.4 | 9-18-27 | 9 | G |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 6-27-60 | 3 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| Moderate use | Other woody plants | Other | Unknown |
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—9; plant species per stop (min-avg-max)—15-23.2-29

Community Phase HCPCP



Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Rooting Depth (cm): Min RV Max
57 57 57

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
57 57 57

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.6 4.0 4.5

Subsurface Layer

Thickness (cm): Min RV Max
0 0 0

Texture: Permanently frozen peat

AWC (cm/cm): Min RV Max
N/A N/A N/A

pH: Min RV Max
3.4 3.9 4.4

Influencing Water Features

NWI Code: PSS3

NWI Description: Palustrine, Scrub-Shrub, Broad-Leaved Evergreen

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 4-25 | 60-75 | 10-15 | 0-5 | 0-5 | 0-0 | 0-15 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 0.1-0.1 | --- | --- | --- |
| FD (<4 inches) | --- | 0.1-0.1 | --- | --- |
| FM (4-24 inches) | --- | 0.1-1 | --- | --- |
| SD (<8 inches) | --- | --- | 15-2 | --- |
| SL (8-36 inches) | --- | --- | 0.1-3 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TS (<15 feet) | --- | --- | --- | 20-20 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 10-10-10 | 33 | 18.3 |
| ERVA4 | <i>Eriophorum vaginatum</i> | 0.1-3.6-7 | 67 | 15.4 |
| ERIOP | <i>Eriophorum</i> | 5-5-5 | 33 | 12.9 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| RUCH | <i>Rubus chamaemorus</i> | 15-16.7-20 | 100 | 40.8 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 50-50-50 | 33 | 40.8 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-5-8 | 100 | 22.4 |
| VAOX | <i>Vaccinium oxycoccos</i> | 2-3.3-5 | 100 | 18.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 5-5-5 | 33 | 12.9 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 3-3-3 | 33 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 15-20-25 | 67 | 36.5 |
| VAUL | <i>Vaccinium uliginosum</i> | 3-9-15 | 67 | 24.5 |
| BENA | <i>Betula nana</i> | 1-3-5 | 100 | 17.3 |
| BEGL | <i>Betula glandulosa</i> | 3-3-3 | 33 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 5-7.5-10 | 67 | 22.4 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 8-14.3-20 | 100 | 37.9 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea mariana</i> | 70-108-150 | 0.75-2-3.1 | 4-11-17 | 6 | G |

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—12-21.3-27

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana/Salix pulchra-Alnus viridis ssp. fruticosa*

Ecological Classification ID: F232XY203AK

Major Land Resource Area: 232—Yukon Flats Lowlands

Physiographic Features

Landform: Drainageways of loess plains

Slope (percent): Min Max
1 5

Elevation (feet): Min Max
1,312 1,640

Range of Aspect Direction: All aspects

Water Table Depth (cm) : Min Max
2 35

Flooding: None

Ponding: None

Runoff: Low

Frost-Free Days: Min Max
75 110

Mean Annual Precipitation (inches): Low High
9 14

Mean Annual Air Temperature (°F): Low High
23 27

Monthly Data:

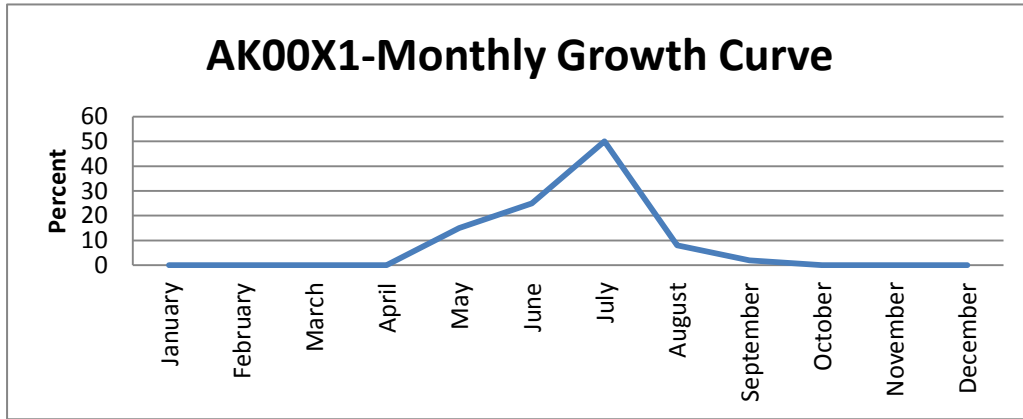
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 1 | -35 | 1 |
| February | 0 | 1 | -29 | 12 |
| March | 0 | 1 | -17 | 19 |
| April | 0 | 1 | 3 | 43 |
| May | 0 | 2 | 27 | 61 |
| June | 1 | 4 | 41 | 72 |
| July | 1 | 4 | 43 | 77 |
| August | 1 | 4 | 39 | 72 |
| September | 1 | 3 | 27 | 54 |
| October | 1 | 2 | 7 | 28 |
| November | 0 | 2 | -17 | 10 |
| December | 0 | 2 | -29 | 1 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D32TL1—D32-Boreal woodland loamy drainages, frozen

D32TL2—D32-Boreal woodland loamy drainages, frozen

D32TL4—D32-Boreal woodland loamy drainages, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, acid, subgelic Fluvaquentic Aquorthels

Dominant Parent Material: Organic material over loamy alluvium

Representative Surface Texture: Peat

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
15 30 60

pH: Low RV High
3.4 4.5 5.3

Effective CEC (me/100g): Low High
13 33.9


CEC (me/100g): Min RV Max
9 27 62


Organic Matter (percent): Low RV High
2 28 80

Bulk Density (1/3-Bar): Min RV Max
0.2 0.9 1.35

Plant Community Phases

| | | | |
|---|---|-------------|-----------|
| Ecological Site Description ID: | | F232XY203AK | |
| Ecological Dynamics of the Site: | | | |
| <p>This boreal ecological site is associated with drainageways of loess plains. The gradient of these drainageways is minimal (<5% slopes), and communities based on disturbances from an intense flood regime are not present. Differences in the plant communities in this ecological site are presumed to be due to the fire history. As sites progress from community phase 1.3 to 1.1, the surface organic matter content increases and permafrost rises in the soil profile. The soils in community phase 1.1 are classified as Aquorthels and are composed of organic matter over loamy alluvium.</p> | | | |
| State and Transition Diagram: | | | |
| <div><div>1.0 Reference State</div><div>Boreal woodland loamy frozen drainages</div><div>F232XY203AK</div><div><div><div>1.1 (HCPC) Black spruce-alder-tealeaf willow-blueberry-leatherleaf-bluejoint-<i>Sphagnum</i> woodland</div><div>1.2 (2FL) Paper birch-black spruce-alder-tealeaf willow-dwarf birch-<i>Sphagnum</i> forest</div><div>1.3 (2FE) Mixed shrub-mixed herbaceous scrubland</div></div><div><div>1.1 a</div><div>1.2 b</div><div>1.2 a</div><div>1.3 a</div></div></div></div> | | | |
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state were grouped on the basis of the structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the time since the last fire event and the severity of the burn.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|---|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Black spruce-alder-tealeaf willow-blueberry-leatherleaf-bluejoint-Sphagnum woodland |
| Community Phase Narrative: | | | |
| <p><i>Picea mariana</i> is the dominant tree species, and it is primarily in the medium and regenerative strata (total mature tree cover ~10%). The majority of the shrub cover is in the tall and low shrub strata (total shrub cover ~170%). Common shrub species include <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Salix pulchra</i>, <i>Vaccinium uliginosum</i>, <i>Betula glandulosa</i>, <i>Chamaedaphne calyculata</i>, and <i>Ledum palustre</i> ssp. <i>decumbens</i>. Graminoids are abundant in some areas, and the most common species is <i>Calamagrostis canadensis</i>. Forbs and lichen are minor vegetative components. Sphagnum moss forms an extensive ground cover (~40% cover). Two observations of this phase were conducted.</p> | | | |

| Community Pathways | | | |
|-------------------------|---|-----------------------|---|
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | <p>Low-intensity fire. In general, the plant communities resemble those that are likely associated with a low-intensity fire regime. In a low-intensity fire regime, the tree canopy is removed and the surface organic matter is reduced but not enough to expose mineral soils. Permafrost commonly remains in the soil profile after the initial fire event.</p> <p>In a low-intensity fire regime, tussock-forming grasses and scrubs quickly recolonize and become dominant as a result of below-ground root reserves that were not consumed in the fire event. Because black spruce has semi-serotinous cones, it quickly establishes in this ecological site after fire events. Since mineral soils typically are not exposed, conditions are not suitable for development of extensive stands of aspen or paper birch.</p> <p>For this ecological site, phase 1.1 has a longer fire return interval than phase 1.2. The fire return interval likely plays a substantial role in the structure of the black spruce forest. Longer fire return intervals result in a greater abundance of mature black spruce, and shorter fire return intervals result in a greater abundance of shrubs and paper birch.</p> | | |
| Phase 1.2 |  | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Paper birch-black spruce-alder-tealeaf willow-dwarf birch-Sphagnum forest |

| Community Phase Narrative: | |
|---|--|
| <p><i>Betula neoalaskana</i> and <i>Picea mariana</i> are the dominant tree species, and they primarily are in the medium and regenerative tree strata (total mature tree cover ~45%). <i>Picea glauca</i> are also present but at low densities. The majority of the shrub cover is in the tall and low shrub strata (total shrub cover ~260%). Common shrub species include <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Salix pulchra</i>, <i>Vaccinium uliginosum</i>, <i>Betula glandulosa</i>, <i>Rubus chamaemorus</i>, and <i>Ledum groenlandicum</i>. Graminoids, forbs, and lichen are minor vegetative components, but a common species is <i>Equisetum sylvaticum</i>. Sphagnum moss is the most abundant type of moss (~20% cover). Two observations of this phase were conducted.</p> | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Low-intensity fire. The fire return interval is presumed to be shorter than that of phase 1.1 but longer than that of phase 1.3. |
| 1.2b | Normal time and growth without fire. This pathway occurs from a low-intensity fire regime. Paper birch and overall shrub cover decrease. Black spruce matures, and the Sphagnum moss ground cover increases. |

| Phase 1.3 | n/a | | |
|---|---|-----------------------|--|
| Community Phase Number: | 1.3 | Community Phase Name: | Mixed shrub-mixed herbaceous scrubland |
| Community Phase Narrative: | | | |
| No observations for this community phase were conducted. This phase is theoretical. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Black spruce and paper birch mature, creating a mixed forest. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FL



Rooting Depth (cm) : Min RV Max
63 63 63

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm) : Min RV Max
13 13 13

Texture: Mucky peat, peat

AWC (cm/cm) : Min RV Max
0.35 0.35 0.35

pH: Min RV Max
2.7 2.7 2.7

Subsurface Layer

Thickness (cm) : Min RV Max
50 50 50

Texture: Permanently frozen coarse sandy loam, silt loam, muck

AWC (cm/cm) : Min RV Max
0.15 0.24 0.27

pH: Min RV Max
2.9 3.3 3.7

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 3-5 | 25-30 | 10-20 | 15-20 | 2-25 | 0-0 | 0-10 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FM (4-24 inches) | --- | 4-4 | --- | --- |
| SD (<8 inches) | --- | --- | 5-8 | --- |
| SL (8-36 inches) | --- | --- | 25-85 | --- |
| SM (3-10 feet) | --- | --- | 70-70 | --- |
| ST (>10 feet) | --- | --- | 12-60 | --- |
| TR (<15 feet) | --- | --- | --- | 3-4 |
| TM (15-40 feet) | --- | --- | --- | 10-20 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 8-8-8 | 50 | 20.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 4-12-20 | 100 | 34.6 |
| PEFR5 | <i>Petasites frigidus</i> | 3-3-3 | 50 | 12.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| RUCH | <i>Rubus chamaemorus</i> | 5-5.5-6 | 100 | 23.5 |
| VAVI | <i>Vaccinium vitis-idaea</i> | 8-8-8 | 50 | 20.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 15-50-85 | 100 | 70.7 |
| VAUL | <i>Vaccinium uliginosum</i> | 10-17.5-25 | 100 | 41.8 |
| B EGL | <i>Betula glandulosa</i> | 25-25-25 | 50 | 35.4 |
| BENA | <i>Betula nana</i> | 15-15-15 | 50 | 27.4 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 8-8-8 | 50 | 20.0 |
| SPST3 | <i>Spiraea stevenii</i> | 3-3-3 | 50 | 12.2 |

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Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| BEGL | <i>Betula glandulosa</i> | 70-70-70 | 50 | 59.2 |
| ROAC | <i>Rosa acicularis</i> | 4-4-4 | 50 | 14.1 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 60-72.5-85 | 100 | 85.1 |
| SAPU15 | <i>Salix pulchra</i> | 12-31-50 | 100 | 55.7 |
| BETUL | <i>Betula</i> | 15-17.5-20 | 100 | 41.8 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 4-5.5-7 | 100 | 23.5 |
| PIGL | <i>Picea glauca</i> | 3-3-3 | 50 | 12.2 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 20-22.5-25 | 100 | 47.4 |
| PIMA | <i>Picea mariana</i> | 10-15-20 | 100 | 38.7 |
| PIGL | <i>Picea glauca</i> | 12-12-12 | 50 | 24.5 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 44-94-144 | 3.5-6-8 | 36-51-66 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 17-17-17 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—16-17-18

Community Phase HCPC



Rooting Depth (cm): Min Avg Max
42 42 42

Restrictive Feature: Permafrost

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
26 26 26

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3.8 3.8 3.8

Subsurface Layer

Thickness (cm): Min RV Max
16 16 16

Texture: Silt loam

AWC (cm/cm): Min RV Max
0.25 0.32 0.4

pH: Min RV Max
5 5 5

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 1-4 | 15-65 | 7-25 | 3-25 | 0-5 | 0-0 | 10-35 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 70-70 | --- | --- | --- |
| FM (4-24 inches) | --- | 10-10 | --- | --- |
| SL (8-36 inches) | --- | --- | 10-5 | --- |
| SM (3-10 feet) | --- | --- | 15-15 | --- |
| ST (>10 feet) | --- | --- | 35-35 | --- |
| TR (<15 feet) | --- | --- | --- | 5-5 |
| TM (15-40 feet) | --- | --- | --- | 10-10 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CALAM | <i>Calamagrostis</i> | 70-70-70 | 50 | 59.2 |
| CACA4 | <i>Calamagrostis canadensis</i> | 10-10-10 | 50 | 22.4 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------------|----------------------------------|------------------|-----------------------------|
| HUSES | <i>Hyperzia selago var. selago</i> | 4-4-4 | 50 | 14.1 |
| RALA | <i>Ranunculus lapponicus</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| COPA28 | <i>Comarum palustre</i> | 10-10-10 | 50 | 22.4 |
| EQSY | <i>Equisetum sylvaticum</i> | 8-8-8 | 50 | 20.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHAN9 | <i>Chamerion angustifolium</i> | 3-3-3 | 50 | 12.2 |

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Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 20-20-20 | 50 | 31.6 |
| RUCH | <i>Rubus chamaemorus</i> | 5-5-5 | 50 | 15.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------------|----------------------------------|------------------|-----------------------------|
| VAUL | <i>Vaccinium uliginosum</i> | 5-22.5-40 | 100 | 47.4 |
| LEPAD | <i>Ledum palustre ssp. decumbens</i> | 35-35-35 | 50 | 41.8 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 8-11.5-15 | 100 | 33.9 |
| LEGR | <i>Ledum groenlandicum</i> | 15-15-15 | 50 | 27.4 |
| SPST3 | <i>Spiraea stevenii</i> | 15-15-15 | 50 | 27.4 |
| BENA | <i>Betula nana</i> | 10-10-10 | 50 | 22.4 |
| BEGL | <i>Betula glandulosa</i> | 5-5-5 | 50 | 15.8 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| SALIX | <i>Salix</i> | 15-15-15 | 50 | 27.4 |
| BEGL | <i>Betula glandulosa</i> | 10-10-10 | 50 | 22.4 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 50-50-50 | 50 | 50.0 |
| SAPU15 | <i>Salix pulchra</i> | 50-50-50 | 50 | 50.0 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 35-35-35 | 50 | 41.8 |
| SABE2 | <i>Salix bebbiana</i> | 20-20-20 | 50 | 31.6 |
| BETUL | <i>Betula</i> | 7-7-7 | 50 | 18.7 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 2-3.5-5 | 100 | 18.7 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 10-11-12 | 100 | 33.2 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|--------------|--------------------------|---------------------------|---------------|
| Moderate use | Willows | Moose | Unknown |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—12-16.5-21

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca-Betula papyrifera/Alnus viridis ssp. fruticosa*

Ecological Classification ID: F232XY210AK

Major Land Resource Area: 232—Yukon Flats Lowlands

Physiographic Features

Landform: Escarpments

Slope (percent): Min Max

10 70

Elevation (feet): Min Max

656 1,083

Range of Aspect Direction: Southwest to south (clockwise)

Water Table Depth (cm): Min Max

2 35

Flooding: None

Ponding: None

Runoff: Very high

Frost-Free Days: Min Max

75 110

Mean Annual Precipitation (inches): Low High

9 14

Mean Annual Air Temperature (°F): Low High

23 27

Monthly Data:

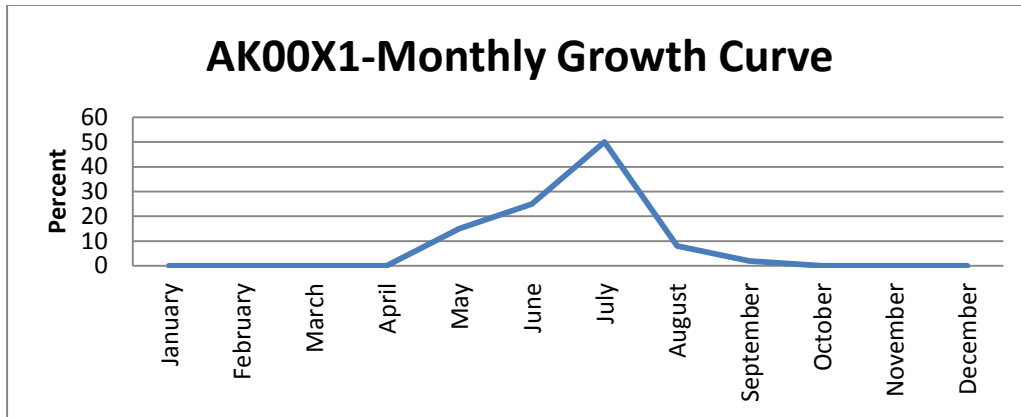
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 1 | -35 | 1 |
| February | 0 | 1 | -29 | 12 |
| March | 0 | 1 | -17 | 19 |
| April | 0 | 1 | 3 | 43 |
| May | 0 | 2 | 27 | 61 |
| June | 1 | 4 | 41 | 72 |
| July | 1 | 4 | 43 | 77 |
| August | 1 | 4 | 39 | 72 |
| September | 1 | 3 | 27 | 54 |
| October | 1 | 2 | 7 | 28 |
| November | 0 | 2 | -17 | 10 |
| December | 0 | 2 | -29 | 1 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D32TL1—D32-Boreal forest gravelly escarpments, frozen

D32TL2—D32-Boreal forest gravelly escarpments, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Folistic Haplorthels

Dominant Parent Material: Organic material over gravelly colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 13 21 34

pH: Low RV High
 3.4 6.2 7.6

Effective CEC (me/100g): Low High
 16 40

CEC (me/100g): Min RV Max
 3.1 23 62

Organic Matter (percent): Low RV High
 2 28 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 1 1.44

Plant Community Phases

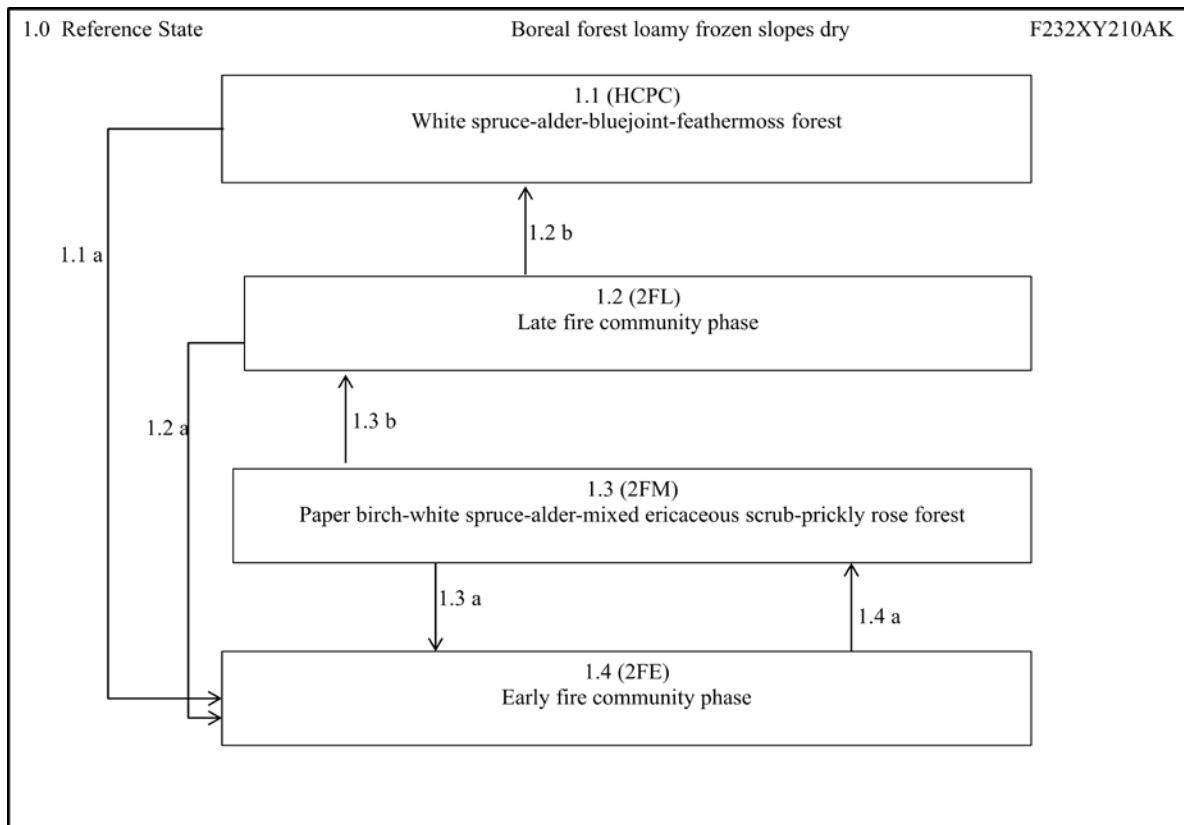
Ecological Site Description ID: F232XY210AK

Ecological Dynamics of the Site:


This boreal ecological site is on steeper escarpments adjacent to loess plains. Slope averages 41% but ranges from 11 to 70%. This ecological site is on slopes with north and east aspects. Fire resulted in two documented phases. As sites progress from community phase 1.4 to 1.1, the surface organic matter increases and permafrost develops and/or rises in the soil profile. The soils in community phase 1.1 are classified as Haplorthels and are composed of organic matter over loamy colluvium.

Fire is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. Due to limited sampling, only two community phases were developed for this ecological site. Since this ecological site has an associated fire regime, it is assumed that there are several undocumented community phases, making the state-and-transition model incomplete.

State and Transition Diagram:




| | | | |
|-------------------------------|--|-------------|-----------|
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state are grouped on the basis of the structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the severity of the burn and the time since the last fire event.</p> <p>Due to the steepness of slope and dominance of a white spruce forest, a high-severity fire regime is considered to be the typical fire disturbance for this ecological site. During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost often drops out of the soil profile, and the sites become drier. Many pre-fire species likely will regenerate after fire, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>The fire return interval plays a substantial role in the structure of the observed forest. Longer fire return intervals favor development of community phase 1.1, and shorter fire return intervals favor development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

| | | | |
|--|---|-----------------------|---|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | White spruce-alder-bluejoint-feathermoss forest |
| Community Phase Narrative: | | | |
| <p><i>Picea glauca</i> is the dominant tree species and is primarily in the tall tree stratum. <i>Betula neoalaskana</i> and <i>Picea mariana</i> are also present but at lower densities (total mature tree cover ~40%; average age of white spruce is 147 years). The shrub cover is primarily in the tall, low, and dwarf strata (total shrub cover ~40%), and common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Ribes triste</i>, <i>Rosa acicularis</i>, <i>Linnaea borealis</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids (~50% cover) and forbs (~50% cover) are abundant, and the most common species are <i>Calamagrostis canadensis</i>, <i>Mertensia paniculata</i>, and various <i>Equisetum</i> sp. Moss forms an extensive ground cover (70% cover), and the most abundant species are <i>Hylocomium splendens</i> and <i>Pleurozium schreberi</i>. Two observations of this phase were conducted.</p> | | | |

| Community Pathways | |
|--------------------|--|
| Pathway Number: | Pathway Name & Description: |
| 1.1a | Fire. Large proportions of the organic mat are consumed (average depth 26 cm), representing a high-severity fire regime. |

| Phase 1.2 | n/a | | |
|---|---|-----------------------|---------------------------|
| Community Phase Number: | 1.2 | Community Phase Name: | Late fire community phase |
| Community Phase Narrative: | | | |
| This community phase is theoretical, but it is based on field observations. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Fire. | | |
| 1.2b | Normal time and growth without fire. White spruce forest matures and largely replaces the paper birch stand. Phase 1.2 is thought to have a shorter fire return interval than phase 1.1 and a longer fire return interval than phase 1.3. | | |

| | | | |
|---|--|-----------------------|---|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Paper birch-white spruce-alder-mixed ericaceous scrub-prickly rose forest |
| Community Phase Narrative: | | | |
| <p><i>Betula neoalaskana</i> is the dominant tree species and is primarily in the tall and medium tree strata. <i>Picea glauca</i> is present in lower densities and is in the tall, medium, and regenerative tree strata (total mature tree cover ~70%; average age of white spruce is 48 years). The shrub cover is distributed among the tall, medium, low, and dwarf strata (total shrub cover ~60%), and common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Ribes triste</i>, <i>Rosa acicularis</i>, <i>Ledum groenlandicum</i>, <i>Spiraea stevenii</i>, and <i>Vaccinium vitis-idaea</i>. Graminoids (~20% cover) and forbs (~30% cover) are abundant, and the most common species are <i>Calamagrostis canadensis</i> and <i>Mertensia paniculata</i>. Moss (30% cover) and leaf litter (~30% cover) are the primary components of the ground cover. The most common moss species is <i>Hylocomium splendens</i>. Four observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Fire. Because this phase has limited organic material (average depth 7 cm), a high-severity fire regime in which a large proportion of the organic mat is consumed during a fire is likely. | | |
| 1.3b | Normal time and growth without fire. White spruce matures and becomes dominant in the canopy, outcompeting paper birch. Phase 1.3 is thought to have a shorter fire return interval than phase 1.2 and a longer fire return interval than phase 1.4. | | |

| | | | |
|---|---|-----------------------|----------------------------|
| Phase 1.4 | n/a | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Early fire community phase |
| Community Phase Narrative: | | | |
| This community phase is theoretical, but it is based on field observations. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.4a | Normal time and growth without fire. Paper birch matures into a forest. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FM



Rooting Depth (cm): Min RV Max
 22 55.7 80

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Surface Layer

Thickness (cm): Min RV Max
8 9.7 11

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
3 4.1 4.8

Subsurface Layer

Thickness (cm): Min RV Max
14 46 69

Texture: Gravelly silt loam, gravelly sandy loam, very gravelly sandy loam, extremely gravelly coarse sandy loam, extremely gravelly loamy coarse sand, sandy loam

AWC (cm/cm): Min RV Max
0.02 0.12 0.24

pH: Min RV Max
4.5 5.4 6.5

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 2-15 | 20-60 | 15-35 | 5-10 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 1-2 | --- | --- |
| FM (4-24 inches) | --- | 2-8 | --- | --- |
| FT (>24 inches) | --- | 2-4 | --- | --- |
| SD (<8 inches) | --- | --- | 20-20 | --- |
| SL (8-36 inches) | --- | --- | 10-12 | --- |
| SM (3-10 feet) | --- | --- | 12-4 | --- |
| ST (>10 feet) | --- | --- | 25-25 | --- |
| TR (<15 feet) | --- | --- | --- | 20-8 |
| TM (15-40 feet) | --- | --- | --- | 15-60 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-30-45 | 75 | 47.4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 2-3.5-5 | 50 | 13.2 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 35-35-35 | 25 | 29.6 |
| MEPA | <i>Mertensia paniculata</i> | 15-15-15 | 50 | 27.4 |
| EQAR | <i>Equisetum arvense</i> | 5-7.7-10 | 75 | 24.0 |
| POAL11 | <i>Polygonum alpinum</i> | 15-15-15 | 25 | 19.4 |
| GABO2 | <i>Galium boreale</i> | 10-10-10 | 25 | 15.8 |
| DEGL3 | <i>Delphinium glaucum</i> | 5-5-5 | 25 | 11.2 |
| ASAL7 | <i>Astragalus alpinus</i> | 5-5-5 | 25 | 11.2 |
| CHANA2 | <i>Chamerion angustifolium</i> <i>ssp. angustifolium</i> | 2-2-2 | 50 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| POAL11 | <i>Polygonum alpinum</i> | 3-3.5-4 | 50 | 13.2 |
| MEPA | <i>Mertensia paniculata</i> | 2-3-4 | 50 | 12.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 5-11.7-20 | 75 | 29.6 |
| LBO3 | <i>Linnaea borealis</i> | 2-3.5-5 | 50 | 13.2 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| RITR | <i>Ribes triste</i> | 4-9.7-15 | 75 | 26.9 |
| LEGR | <i>Ledum groenlandicum</i> | 2-7.3-12 | 75 | 23.5 |
| ROAC | <i>Rosa acicularis</i> | 20-20-20 | 25 | 22.4 |
| SHCA | <i>Shepherdia canadensis</i> | 10-10-10 | 25 | 15.8 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 8-15-25 | 75 | 33.5 |
| SPST3 | <i>Spiraea stevenii</i> | 4-5.5-7 | 50 | 16.6 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-15.7-25 | 75 | 34.3 |
| SAHA | <i>Salix hastata</i> | 15-15-15 | 25 | 19.4 |

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Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 4-11-20 | 100 | 33.2 |
| BENE4 | <i>Betula neoalaskana</i> | 8-8-8 | 50 | 20.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 20-46.7-60 | 75 | 59.2 |
| PIGL | <i>Picea glauca</i> | 9-14.7-20 | 75 | 33.2 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 55-55-55 | 25 | 37.1 |
| PIGL | <i>Picea glauca</i> | 45-45-45 | 25 | 33.5 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 34-48-59 | 3.6-6-8 | 26-40-48 | 8 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 30-40.3-80 | 4 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other woody plants | Moose | Unknown |

Notable Plants: None

Species Richness: Number of stops—4; plant species per stop (min-avg-max)—17-21.2-27

Community Phase HCPC



Rooting Depth (cm): Min RV Max
 38 38 38

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
 24 24 24

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
 0.35 0.35 0.35

pH: Min RV Max
 3.6 3.6 3.6

Subsurface Layer

Thickness (cm): Min RV Max
 14 14 14

Texture: Very fine sandy loam

AWC (cm/cm): Min RV Max
 0.25 0.25 0.25

pH: Min RV Max
 6.1 6.1 6.1

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 4-10 | 60-75 | 8-10 | 6-15 | 0-0 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 75-75 | --- | --- | --- |
| FD (<4 inches) | --- | 4-4 | --- | --- |
| FM (4-24 inches) | --- | 2-30 | --- | --- |
| SD (<8 inches) | --- | --- | 2-6 | --- |
| SL (8-36 inches) | --- | --- | 3-5 | --- |
| SM (3-10 feet) | --- | --- | 7-7 | --- |
| ST (>10 feet) | --- | --- | 15-15 | --- |
| TR (<15 feet) | --- | --- | --- | 10-5 |
| TM (15-40 feet) | --- | --- | --- | 5-5 |
| TT (>40 feet) | --- | --- | --- | 25-25 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 15-15-15 | 50 | 27.4 |

Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 75-75-75 | 50 | 61.2 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQSC | <i>Equisetum scirpoides</i> | 15-15-15 | 50 | 27.4 |
| PYROL | <i>Pyrola</i> | 5-5-5 | 50 | 15.8 |
| GELI2 | <i>Geocaulon lividum</i> | 4-4-4 | 50 | 14.1 |
| STELL | <i>Stellaria</i> | 3-3-3 | 50 | 12.2 |

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Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---|----------------------------------|------------------|-----------------------------|
| EQSY | <i>Equisetum sylvaticum</i> | 30-30-30 | 50 | 38.7 |
| MEPA | <i>Mertensia paniculata</i> | 20-20-20 | 50 | 31.6 |
| EQPR | <i>Equisetum pratense</i> | 20-20-20 | 50 | 31.6 |
| CHANA2 | <i>Chamerion angustifolium</i> <i>ssp. angustifolium</i> | 3-3-3 | 50 | 12.2 |
| BORO | <i>Boschniakia rossica</i> | 3-3-3 | 50 | 12.2 |
| GORE2 | <i>Goodyera repens</i> | 2-2-2 | 50 | 10.0 |
| PYAS | <i>Pyrola asarifolia</i> | 2-2-2 | 50 | 10.0 |
| GABO2 | <i>Galium boreale</i> | 2-2-2 | 50 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 6-8-10 | 100 | 28.3 |
| LIBO3 | <i>Linnaea borealis</i> | 2-2.5-3 | 100 | 15.8 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| RITR | <i>Ribes triste</i> | 3-4-5 | 100 | 20.0 |
| SPST3 | <i>Spiraea stevenii</i> | 2-3.5-5 | 100 | 18.7 |
| ROAC | <i>Rosa acicularis</i> | 5-5-5 | 50 | 15.8 |
| LEGR | <i>Ledum groenlandicum</i> | 3-3-3 | 50 | 12.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 7-7-7 | 50 | 18.7 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 15-15-15 | 100 | 38.7 |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | 15-15-15 | 50 | 27.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 15-15-15 | 50 | 27.4 |
| BENE4 | <i>Betula neoalaskana</i> | 5-7.5-10 | 100 | 27.4 |
| PIGL | <i>Picea glauca</i> | 5-5-5 | 50 | 15.8 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 5-7.5-10 | 100 | 27.4 |
| PIGL | <i>Picea glauca</i> | 5-5-5 | 100 | 22.4 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 25-32.5-40 | 100 | 57.0 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Picea glauca</i> | 126-147-166 | 9-11-12.7 | 72-78-87 | 4 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 10-54-98 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—25-27-29

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea glauca/Shepherdia canadensis-Rosa acicularis*

Ecological Classification ID: F232XY211AK

Major Land Resource Area: 232—Yukon Flats Lowlands

Physiographic Features

Landform: Escarpments

Slope (percent): Min Max

50 70

Elevation (feet): Min Max

1,033 1,312

Range of Aspect Direction: East to northwest (clockwise)

Water Table Depth (cm): Min Max

0 0

Flooding: None

Ponding: None

Runoff: High

Frost-Free Days: Min Max

75 110

Mean Annual Precipitation (inches): Low High

9 14

Mean Annual Air Temperature (°F): Low High

23 27

Monthly Data:

| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 1 | -35 | 1 |
| February | 0 | 1 | -29 | 12 |
| March | 0 | 1 | -17 | 19 |
| April | 0 | 1 | 3 | 43 |
| May | 0 | 2 | 27 | 61 |
| June | 1 | 4 | 41 | 72 |
| July | 1 | 4 | 43 | 77 |
| August | 1 | 4 | 39 | 72 |
| September | 1 | 3 | 27 | 54 |
| October | 1 | 2 | 7 | 28 |
| November | 0 | 2 | -17 | 10 |
| December | 0 | 2 | -29 | 1 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days

Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D32TL2—D32-Boreal taiga loamy escarpment slopes

Characteristics of Representative Soil Components

Soil Classification: Sandy or sandy-skeletal, mixed Typic Haplocryods

Dominant Parent Material: Sandy and gravelly colluvium

Representative Surface Texture: Loam

Subsurface Texture Group: Sandy or sandy-skeletal

Saturated Hydraulic Conductivity: Moderately high to high

AWC Total (cm): Low RV High
 7 12 20

pH: Low RV High
 5.2 6.4 7.5

Effective CEC (me/100g): Low High
 5.7 9

CEC (me/100g): Min RV Max
 2.4 5.2 8

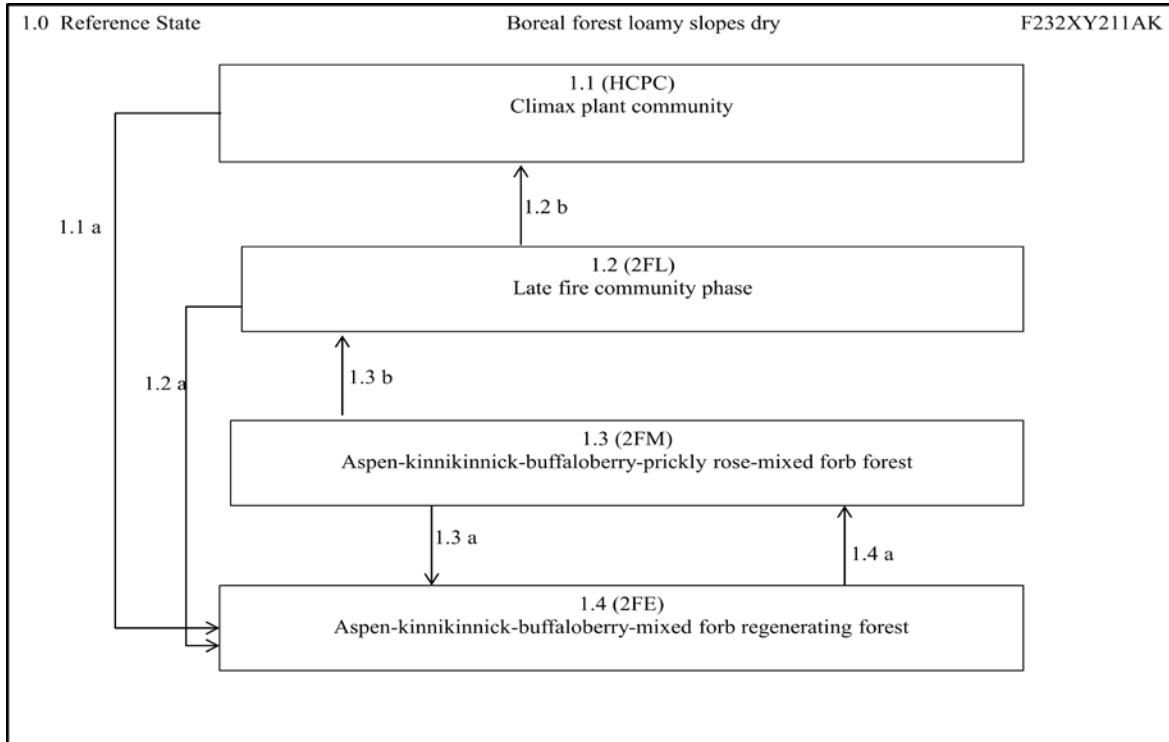
Organic Matter (percent): Low RV High
 0.9 3 6

Bulk Density (1/3-Bar): Min RV Max
 1.33 1.5 1.59

Plant Community Phases

| | |
|--|-------------|
| Ecological Site Description ID: | F232XY211AK |
| Ecological Dynamics of the Site: | |
| <p>This boreal ecological site is on very steep escarpments adjacent to loess plains. Slope averages 61% and ranges from 58 to 64%. This ecological site is on south and west aspects. Fire resulted in two observed plant communities. As sites progress from community phase 1.4 to 1.3, the surface organic matter increases and a deciduous forest develops. The soils in community phase 1.3 are classified as Haplocryods and are composed of organic material over loamy colluvium over sandy and gravelly colluvium.</p> <p>Fire is a natural and typically unmanaged disturbance regime. The typical fire return interval for coniferous forests of interior Alaska is approximately 100 years. Due to limited sampling, only two community phases were developed for this ecological site. Since this ecological site has an associated fire regime, it is assumed that there are several undocumented community phases, making the state-and-transition model incomplete.</p> | |

State and Transition Diagram:





| | | | |
|-------------------------------|---|-------------|-----------|
| State and Transition Diagram: | 1 | State Name: | Reference |
| State Narrative: | <p>Phases in the reference state were grouped on the basis of the structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the severity of the burn and the time since the last fire event.</p> <p>Due to the steepness of slope, aspect, and minimal depth of the organic matter, a high-severity fire regime is considered to be the typical fire disturbance for this ecological site. During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost often drops out of the soil profile, and the sites become drier. Many pre-fire species likely regenerate after fire, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow).</p> <p>The fire return interval plays a substantial role in the structure of the forest. Longer fire return intervals favor development of community phase 1.1, and shorter fire return intervals favor development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> | | |

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| | | | |
|---|-----------------------------|-----------------------|------------------------|
| Phase 1.1 | n/a | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Climax plant community |
| Community Phase Narrative: | | | |
| This community phase is theoretical, but it is based on field observations. This phase is believed to be a white spruce forest. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Fire. | | |

| | | | |
|---|--------------------------------------|-----------------------|---------------------------|
| Phase 1.2 | n/a | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Late fire community phase |
| Community Phase Narrative: | | | |
| This community phase is theoretical, but it is based on field observations. This phase is believed to be a mixed white spruce-aspen forest. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.2a | Fire. | | |
| 1.2b | Normal time and growth without fire. | | |

| | | | |
|---|--|-----------------------|--|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Aspen-kinnikinnick-buffaloberry-prickly rose-mixed forb forest |
| Community Phase Narrative: | | | |
| <p><i>Populus tremuloides</i> is the dominant tree species and is primarily in the medium tree stratum. <i>Picea glauca</i> is present in lower densities and is in the regenerative tree stratum (total mature tree cover ~65%). The shrub cover is distributed between the low and dwarf strata (total shrub cover ~60%), and common species are <i>Rosa acicularis</i>, <i>Shepherdia canadensis</i>, <i>Juniperus communis</i>, <i>Arctostaphylos uva-ursi</i>, and <i>Linnaea borealis</i>. Forbs (~20% cover) are abundant, and the most common species are <i>Galium boreale</i>, <i>Silene menziesii</i>, <i>Eurybia sibirica</i>, and <i>Pulsatilla patens</i>. Moss (~20% cover), leaf litter (~25% cover), and woody litter (~20% cover) are the primary components of the ground cover. The most common moss species is <i>Polytrichum</i> sp. One observation of this phase was conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Fire. | | |
| 1.3b | Normal time and growth without fire. | | |

| | | | |
|--|--|-----------------------|--|
| Phase 1.4 |  | | |
| Community Phase Number: | 1.4 | Community Phase Name: | Aspen-kinnikinnick-buffaloberry-mixed forb regenerating forest |
| Community Phase Narrative: | | | |
| <p><i>Populus tremuloides</i> is the dominant tree species and is primarily in the regenerative tree stratum (~55% cover saplings). <i>Picea glauca</i> and <i>Betula neoalaskana</i> are present in lower densities and are in the regenerative tree stratum (total mature tree cover ~10% [all aspen]). The shrub cover is distributed between the low and dwarf strata (total shrub cover ~120%), and common species are <i>Rosa acicularis</i>, <i>Viburnum edule</i>, <i>Shepherdia canadensis</i>, <i>Arctostaphylos uva-ursi</i>, and <i>Linnaea borealis</i>. Forbs (~30% cover) are abundant and diverse. The most common species are <i>Galium boreale</i>, <i>Silene menziesii</i>, <i>Eurybia sibirica</i>, <i>Chamerion angustifolium</i>, and <i>Pulsatilla patens</i>. Moss (~15% cover), leaf litter (~25% cover), and woody litter (~15% cover) are the primary components of the ground cover. The most common moss species are <i>Polytrichum sp.</i> and <i>Ceratodon purpurascens</i>. Two observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.4a | Normal time and growth without fire. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FE



Rooting Depth (cm): Min RV Max
71 71 71

Restrictive Features: None recorded

Drainage Class: Excessively drained

Surface Layer

Thickness (cm): Min RV Max
0 0 0

Texture: Coarse sandy loam, silt loam

AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
6.5 6.5 6.5

Subsurface Layer

Thickness (cm): Min RV Max
71 71 71

Texture: Very gravelly coarse sand, extremely gravelly coarse sand, silt loam

AWC (cm/cm): Min RV Max
0.01 0.07 0.24

pH: Min RV Max
5.2 6.1 7.3

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 4-8 | 5-23 | 25-30 | 4-20 | 5-7 | 5-5 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 2-2 | --- | --- |
| FM (4-24 inches) | --- | 3-6 | --- | --- |
| FT (>24 inches) | --- | 2-5 | --- | --- |
| SD (<8 inches) | --- | --- | 3-60 | --- |
| SL (8-36 inches) | --- | --- | 15-7 | --- |
| TR (<15 feet) | --- | --- | --- | 20-7 |
| TM (15-40 feet) | --- | --- | --- | 18-18 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------------|----------------------------------|------------------|-----------------------------|
| SIME | <i>Silene menziesii</i> | 4-4-4 | 50 | 14.1 |
| ANSE4 | <i>Androsace septentrionalis</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| PUPA5 | <i>Pulsatilla patens</i> | 6-6-6 | 100 | 24.5 |
| GABO2 | <i>Galium boreale</i> | 5-5.5-6 | 100 | 23.5 |
| EUSI13 | <i>Eurybia sibirica</i> | 4-4-4 | 100 | 20.0 |
| CHAN9 | <i>Chamerion angustifolium</i> | 4-4-4 | 50 | 14.1 |
| SATR5 | <i>Saxifraga tricuspidata</i> | 4-4-4 | 50 | 14.1 |
| MEPA | <i>Mertensia paniculata</i> | 4-4-4 | 50 | 14.1 |
| ARABI2 | <i>Arabis</i> | 4-4-4 | 50 | 14.1 |
| SIME | <i>Silene menziesii</i> | 3-3-3 | 50 | 12.2 |
| SARE8 | <i>Saxifraga reflexa</i> | 3-3-3 | 50 | 12.2 |
| SOSI3 | <i>Solidago simplex</i> | 3-3-3 | 50 | 12.2 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| SOLID | <i>Solidago</i> | 5-5-5 | 50 | 15.8 |
| CHAN9 | <i>Chamerion angustifolium</i> | 2-2-2 | 50 | 10.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| ARUV | <i>Arctostaphylos uva-ursi</i> | 60-67.5-75 | 100 | 82.2 |
| LIBO3 | <i>Linnaea borealis</i> | 3-11.5-20 | 100 | 33.9 |
| SARE2 | <i>Salix reticulata</i> | 4-4-4 | 50 | 14.1 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| SHCA | <i>Shepherdia canadensis</i> | 17-17.5-18 | 100 | 41.8 |
| VIDE | <i>Viburnum edule</i> | 10-12.5-15 | 100 | 35.4 |
| ROAC | <i>Rosa acicularis</i> | 7-7-7 | 100 | 26.5 |
| JUCO6 | <i>Juniperus communis</i> | 2-2-2 | 50 | 10.0 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 20-55-90 | 100 | 74.2 |
| PIGL | <i>Picea glauca</i> | 4-5.5-7 | 100 | 23.5 |
| BENE4 | <i>Betula neoalaskana</i> | 10-10-10 | 50 | 22.4 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 18-18-18 | 50 | 30.0 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Other | Other | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—20-20-20

Community Phase 2FM



Rooting Depth (cm): Min RV Max
80 84.5 89

Restrictive Features: None recorded

Drainage Class: Excessively drained

Surface Layer

Thickness (cm): Min RV Max
0 1.5 3

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.14 0.24 0.35

pH: Min RV Max
6.5 7 7.5

Subsurface Layer

Thickness (cm): Min RV Max
80 83 86

Texture: Very gravelly loamy coarse sand, extremely gravelly loamy coarse sand, loam, coarse sandy loam

AWC (cm/cm): Min RV Max
0.02 0.08 0.22

pH: Min RV Max
5.7 6.5 7

Influencing Water FeaturesNWI Code: None recordedNWI Description: None recordedRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 6-6 | 20-20 | 25-25 | 20-20 | 5-5 | 4-4 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 1-4 | --- | --- |
| FM (4-24 inches) | --- | 1-7 | --- | --- |
| SD (<8 inches) | --- | --- | 20-4 | --- |
| SL (8-36 inches) | --- | --- | 12-5 | --- |
| TR (<15 feet) | --- | --- | --- | 3-5 |
| TM (15-40 feet) | --- | --- | --- | 65-65 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| SIME | <i>Silene menziesii</i> | 4-4-4 | 100 | 20.0 |
| MOLA6 | <i>Moehringia lateriflora</i> | 1-1-1 | 100 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| PUPA5 | <i>Pulsatilla patens</i> | 7-7-7 | 100 | 26.5 |
| GABO2 | <i>Galium boreale</i> | 4-4-4 | 100 | 20.0 |
| EUSI13 | <i>Eurybia sibirica</i> | 3-3-3 | 100 | 17.3 |
| SOMU | <i>Solidago multiradiata</i> | 3-3-3 | 100 | 17.3 |
| ARABI2 | <i>Arabis</i> | 1-1-1 | 100 | 10.0 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| ARRU | <i>Arctostaphylos rubra</i> | 20-20-20 | 100 | 44.7 |
| LIBO3 | <i>Linnaea borealis</i> | 4-4-4 | 100 | 20.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| SHCA | <i>Shepherdia canadensis</i> | 15-15-15 | 100 | 38.7 |
| ROAC | <i>Rosa acicularis</i> | 12-12-12 | 100 | 34.6 |
| JUCO6 | <i>Juniperus communis</i> | 5-5-5 | 100 | 22.4 |
| VIDE | <i>Viburnum edule</i> | 5-5-5 | 100 | 22.4 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 5-5-5 | 100 | 22.4 |
| PIGL | <i>Picea glauca</i> | 3-3-3 | 100 | 17.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| POTR5 | <i>Populus tremuloides</i> | 65-65-65 | 100 | 80.6 |

Site Tree Measurements: Not measured

Tree Basal Area: Not measured

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|------------|--------------------------|---------------------------|---------------|
| Slight use | Other | | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—1; plant species per stop (min-avg-max)—21-21-21

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS forestland site

Ecological Classification Name: *Picea mariana*/*Alnus viridis* ssp. *fruticosa*-*Ledum groenlandicum*

Ecological Classification ID: F232XY227AK

Major Land Resource Area: 232—Yukon Flats Lowlands

Physiographic Features

Landform: Loess plains, escarpments

Slope (percent): Min Max
10 20

Elevation (feet): Min Max
755 1,378

Range of Aspect Direction: Northeast to west (clockwise)

Water Table Depth (cm): Min Max
2 35

Flooding: None

Ponding: None

Runoff: Medium

Frost-Free Days: Min Max
75 110

Mean Annual Precipitation (inches): Low High
9 14

Mean Annual Air Temperature (°F): Low High
23 27

Monthly Data:

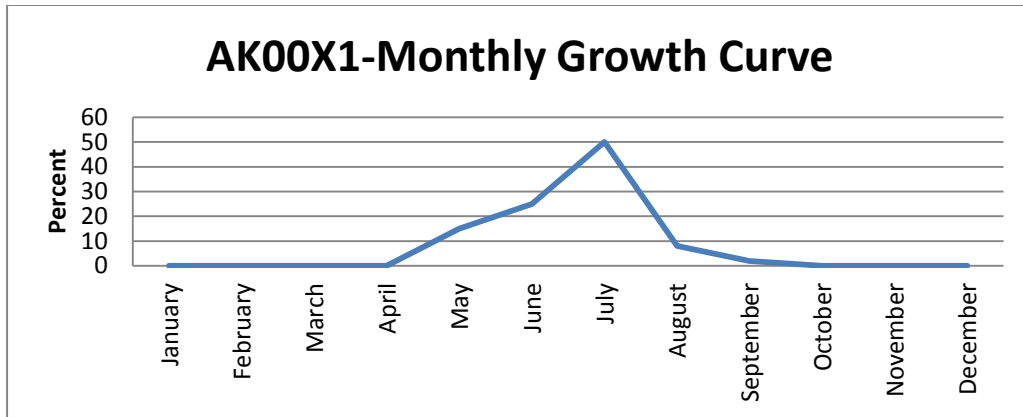
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 1 | -35 | 1 |
| February | 0 | 1 | -29 | 12 |
| March | 0 | 1 | -17 | 19 |
| April | 0 | 1 | 3 | 43 |
| May | 0 | 2 | 27 | 61 |
| June | 1 | 4 | 41 | 72 |
| July | 1 | 4 | 43 | 77 |
| August | 1 | 4 | 39 | 72 |
| September | 1 | 3 | 27 | 54 |
| October | 1 | 2 | 7 | 28 |
| November | 0 | 2 | -17 | 10 |
| December | 0 | 2 | -29 | 1 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D32TL2—D32-Boreal taiga silty eolian slopes, frozen

Characteristics of Representative Soil Components

Soil Classification: Coarse-loamy, mixed, superactive, nonacid, subgelic Typic Haplorthels

Dominant Parent Material: Organic material over loamy colluvium

Representative Surface Texture: Slightly decomposed plant material

Subsurface Texture Group: Coarse-loamy

Saturated Hydraulic Conductivity: Moderately low to moderately high

AWC Total (cm): Low RV High
 15 29 58

pH: Low RV High
 3.4 7 7.7

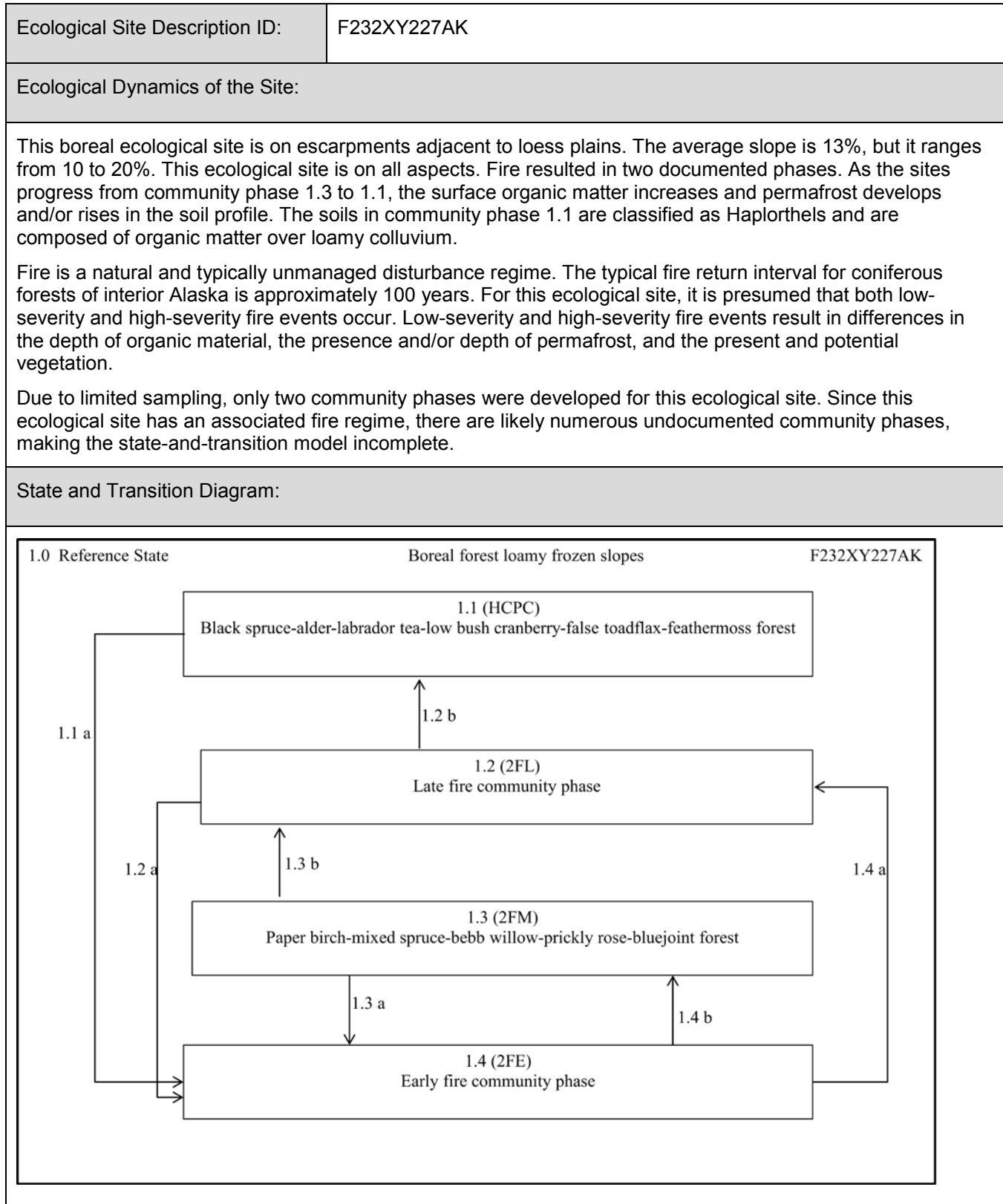
Effective CEC (me/100g): Low High
 19.3 50

CEC (me/100g): Min RV Max
 4.9 24.5 62


Organic Matter (percent): Low RV High
 2 28 80

Bulk Density (1/3-Bar): Min RV Max
 0.2 0.9 1.25

Plant Community Phases




| State and Transition Diagram: | 1 | State Name: | Reference |
|-------------------------------|---|-------------|--|
| State Narrative: | | | <p>Phases in the reference state were grouped on the basis of the structure and dominance of deciduous and coniferous trees, which are believed to be directly related to the severity of the burn and the time since the last fire event.</p> <p>During a low-severity fire, minimal proportions of the organic mat are consumed and mineral soils typically are not exposed. Permafrost typically remains in the soil profile, and water commonly perches above it. Graminoids and scrubs quickly recolonize and become dominant as a result of below-ground root reserves that were not consumed in the fire event. Because black spruce has semi-serotinous cones, it quickly reestablishes after fire events. With the absence of fire, early fire communities associated with this disturbance regime are thought to progress to community phase 1.2.</p> <p>During a high-severity fire, large proportions of the organic mat are consumed and mineral soils typically are exposed. Permafrost commonly drops out of the soil profile, and the sites become drier. Many pre-fire species likely will regenerate, but conditions are suitable for the establishment and growth of species from windblown seed (e.g., paper birch, fireweed, and willow). With the absence of fire, early fire sere communities associated with this disturbance regime are thought to progress to community phase 1.3.</p> <p>The fire return interval plays a substantial role in the structure of the forest. Longer fire return intervals favor development of community phase 1.1, and shorter fire return intervals favor development of community phases 1.2 and 1.3.</p> <p>The height of tall trees is defined as more than 40 feet, medium trees as 15 to 40 feet, and stunted and regenerative trees as less than 15 feet. The height of tall shrubs is defined as more than 10 feet, medium shrubs as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches.</p> |

| | | | |
|--|--|-----------------------|--|
| Phase 1.1 |  | | |
| Community Phase Number: | 1.1 | Community Phase Name: | Black spruce-alder-Labrador tea-low bush cranberry-false toadflax-feathermoss forest |
| Community Phase Narrative: | | | |
| <p><i>Picea mariana</i> is the dominant tree species and is primarily in the medium tree stratum (total mature tree cover ~40%; average tree age 105 years). The shrub cover is primarily in the low and dwarf strata (total shrub cover ~80%), and common species are <i>Alnus viridis</i> ssp. <i>fruticosa</i>, <i>Ledum groenlandicum</i>, and <i>Vaccinium vitis-idaea</i>. Forbs are abundant (~30% cover), and the most common species is <i>Geocaulon lividum</i>. Lichen (30% cover) and moss (40% cover) form an extensive ground cover. Common species include <i>Cladina</i> sp., <i>Hylocomium splendens</i>, and <i>Pleurozium schreberi</i>. Three observations of this phase were conducted.</p> | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.1a | Fire. Refer to state narrative for differences in low- and high-severity fire regimes. | | |

| | | | |
|-------------------------|-----|-----------------------|---------------------------|
| Phase 1.2 | n/a | | |
| Community Phase Number: | 1.2 | Community Phase Name: | Late fire community phase |

| | |
|---|--|
| Community Phase Narrative: | |
| This community phase is theoretical, but it is based on field observations. | |
| Community Pathways | |
| Pathway Number: | Pathway Name & Description: |
| 1.2a | Fire. Refer to state narrative for differences in low- and high-severity fire regimes. |
| 1.2b | Normal time and growth. Phase 1.2 is thought to have a shorter fire return interval than phase 1.1 and a longer fire return interval than phase 1.4. |

| | | | |
|--|---|-----------------------|--|
| Phase 1.3 |  | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Paper birch-mixed spruce-bebb willow-prickly rose-bluejoint forest |
| Community Phase Narrative: | | | |
| <p><i>Betula neoalaskana</i> is the dominant tree species, and <i>Picea mariana</i> and <i>Picea glauca</i> are also present in lower densities. Trees are primarily in the regenerative tree stratum. The tree cover is split among the tall, medium, and regenerative tree strata (total mature tree cover ~95%; average age of <i>Picea glauca</i> is 40 years). The shrub cover primarily is in the tall, medium, and low shrub strata (total shrub cover ~40%), and common species include <i>Salix bebbiana</i>, <i>Rosa acicularis</i>, <i>Ribes hudsonianum</i>, and <i>Spiraea stevenii</i>. Graminoids, forbs, and lichen are minor vegetative components, but common species are <i>Calamagrostis canadensis</i> and <i>Mertensia paniculata</i>. Moss is abundant (25% cover), and the most common species are <i>Dicranum sp.</i> and <i>Hylocomium splendens</i>. Two observations of this phase were conducted.</p> | | | |

| Community Pathways | | | |
|---|---|-----------------------|----------------------------|
| Pathway Number: | Pathway Name & Description: | | |
| 1.3a | Fire. Refer to state narrative for differences in low- and high-severity fire regimes. Due to limited organic material, fire events likely consume a large proportion of the organic mat and are probably high-severity fires. | | |
| 1.3b | <p>Normal time and growth without fire. Organic material increases and permafrost migrates upward in the soil profile. Phase 1.3 is thought to have a shorter fire return interval than phase 1.1 and a longer fire return interval than phase 1.4.</p> <p>A long interval between fires would be needed for development of pathway 1.3b. This interval is likely longer than the typical interval for Interior Alaska, which is approximately 100 years.</p> | | |
| Phase 1.4 | n/a | | |
| Community Phase Number: | 1.3 | Community Phase Name: | Early fire community phase |
| Community Phase Narrative: | | | |
| This community phase is theoretical, but it is based on field observations. | | | |
| Community Pathways | | | |
| Pathway Number: | Pathway Name & Description: | | |
| 1.4a | Normal time and growth without fire. This pathway occurs as a result of a low-intensity fire regime. | | |
| 1.4b | Normal time and growth without fire. This pathway occurs as a result of a high-intensity fire regime. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2FM



Rooting Depth (cm): Min RV Max
89 108.5 128

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
5 6.5 8

Texture: Slightly decomposed plant material

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.4 5.2 6.1

Subsurface Layer

Thickness (cm): Min RV Max
84 102 120

Texture: Permanently frozen silt loam, silt loam

AWC (cm/cm): Min RV Max
0.25 0.25 0.25

pH: Min RV Max
6.5 7.3 7.7

Influencing Water FeaturesNWI Code: NoneNWI Description: NoneRosgen Classification: None recordedStructure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-8 | 25-30 | 30-45 | 15-18 | 0-2 | 0-0 | 0-0 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GT (>24 inches) | 7-7 | --- | --- | --- |
| FD (<4 inches) | --- | 10-2 | --- | --- |
| FM (4-24 inches) | --- | 8-8 | --- | --- |
| FT (>24 inches) | --- | 2-4 | --- | --- |
| SD (<8 inches) | --- | --- | 2-2 | --- |
| SL (8-36 inches) | --- | --- | 2-5 | --- |
| ST (>10 feet) | --- | --- | 12-12 | --- |
| TR (<15 feet) | --- | --- | --- | 4-4 |
| TM (15-40 feet) | --- | --- | --- | 20-3 |
| TT (>40 feet) | --- | --- | --- | 75-75 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| CACA4 | <i>Calamagrostis canadensis</i> | 4-5.5-7 | 100 | 23.5 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------|----------------------------------|------------------|-----------------------------|
| COCA13 | <i>Cornus canadensis</i> | 10-10-10 | 50 | 22.4 |
| MOLA6 | <i>Moehringia lateriflora</i> | 2-2-2 | 50 | 10.0 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| EQPR | <i>Equisetum pratense</i> | 8-8-8 | 50 | 20.0 |
| EQSC | <i>Equisetum scirpoides</i> | 2-2-2 | 50 | 10.0 |
| EQAR | <i>Equisetum arvense</i> | 2-2-2 | 50 | 10.0 |

Stratum—FT (>24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| MEPA | <i>Mertensia paniculata</i> | 4-4.5-5 | 100 | 21.2 |
| POAL11 | <i>Polygonum alpinum</i> | 2-2-2 | 50 | 10.0 |

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Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 4-4-4 | 50 | 14.1 |
| LIBO3 | <i>Linnaea borealis</i> | 2-2-2 | 50 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|----------------------------|----------------------------------|------------------|-----------------------------|
| RIHU | <i>Ribes hudsonianum</i> | 4-5.5-7 | 100 | 23.5 |
| RUID | <i>Rubus idaeus</i> | 5-5-5 | 50 | 15.8 |
| LEGR | <i>Ledum groenlandicum</i> | 4-4-4 | 50 | 14.1 |
| SPST3 | <i>Spiraea stevenii</i> | 2-2-2 | 100 | 14.1 |
| ROAC | <i>Rosa acicularis</i> | 3-3-3 | 50 | 12.2 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| ROAC | <i>Rosa acicularis</i> | 20-20-20 | 50 | 31.6 |
| RUID | <i>Rubus idaeus</i> | 7-7-7 | 50 | 18.7 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 25-25-25 | 50 | 35.4 |
| SABE2 | <i>Salix bebbiana</i> | 7-9.5-12 | 100 | 30.8 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIGL | <i>Picea glauca</i> | 4-19.5-35 | 100 | 44.2 |
| PIMA | <i>Picea mariana</i> | 8-8-8 | 50 | 20.0 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 20-40-60 | 100 | 63.2 |
| PIGL | <i>Picea glauca</i> | 3-9-15 | 100 | 30.0 |
| PIMA | <i>Picea mariana</i> | 15-15-15 | 50 | 27.4 |

Stratum—TT (>40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------|----------------------------------|------------------|-----------------------------|
| BENE4 | <i>Betula neoalaskana</i> | 10-42.5-75 | 100 | 65.2 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|---------------------------|--------------------|----------------------|----------------------|-------------------|-------------------------------|
| <i>Betula neoalaskana</i> | --- | 6-6-6 | 55-55-55 | 1 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 40-60-80 | 2 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|--------------|--------------------------|---------------------------|---------------|
| Moderate use | Other | Other | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—2; plant species per stop (min-avg-max)—22-23.5-25

Community Phase HCPC



Rooting Depth (cm): Min RV Max
20 20 20

Restrictive Feature: Permafrost

Drainage Class: Somewhat poorly drained

Surface Layer

Thickness (cm): Min RV Max
13 13 13

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4.2 4.4 4.7

Subsurface Layer

Thickness (cm): Min RV Max
7 7 7

Texture: Gravelly sandy loam

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

AWC (cm/cm): Min RV Max
0.13 0.13 0.13

pH: Min RV Max
4.9 4.9 4.9

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and Cover

Ground Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 20-45 | 40-65 | 5-15 | 5-15 | 0-3 | 0-0 | 0-2 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| FD (<4 inches) | --- | 10-2 | --- | --- |
| FM (4-24 inches) | --- | 10-20 | --- | --- |
| SD (<8 inches) | --- | --- | 15-5 | --- |
| SL (8-36 inches) | --- | --- | 3-5 | --- |
| SM (3-10 feet) | --- | --- | 35-5 | --- |
| TR (<15 feet) | --- | --- | --- | 10-10 |
| TM (15-40 feet) | --- | --- | --- | 30-30 |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:

Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|---------------------------------|----------------------------------|------------------|-----------------------------|
| ERIOP | <i>Eriophorum</i> | 8-8-8 | 33 | 16.3 |
| CACA4 | <i>Calamagrostis canadensis</i> | 7-7-7 | 33 | 15.3 |

Stratum—FD (<4 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| PYROL | <i>Pyrola</i> | 10-10-10 | 33 | 18.3 |
| EQSC | <i>Equisetum scirpoides</i> | 10-10-10 | 33 | 18.3 |
| PEFR5 | <i>Petasites frigidus</i> | 2-2.5-3 | 67 | 12.9 |

Stratum—FM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-----------------------------|----------------------------------|------------------|-----------------------------|
| GELI2 | <i>Geocaulon lividum</i> | 2-9.3-20 | 100 | 30.6 |
| EQPR | <i>Equisetum pratense</i> | 20-20-20 | 33 | 25.8 |
| MEPA | <i>Mertensia paniculata</i> | 10-10-10 | 33 | 18.3 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 15-17.3-22 | 100 | 41.6 |
| VAOX | <i>Vaccinium oxycoccos</i> | 2-3.5-5 | 67 | 15.3 |
| EMNI | <i>Empetrum nigrum</i> | 5-5-5 | 33 | 12.9 |
| ARRU | <i>Arctostaphylos rubra</i> | 5-5-5 | 33 | 12.9 |
| RUCH | <i>Rubus chamaemorus</i> | 3-3-3 | 33 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| LEGR | <i>Ledum groenlandicum</i> | 17-25.7-35 | 100 | 50.7 |
| B EGL | <i>Betula glandulosa</i> | 10-10-10 | 33 | 18.3 |
| VAUL | <i>Vaccinium uliginosum</i> | 3-4-5 | 67 | 16.3 |
| ROAC | <i>Rosa acicularis</i> | 7-7-7 | 33 | 15.3 |
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-5-5 | 33 | 12.9 |
| BENA | <i>Betula nana</i> | 5-5-5 | 33 | 12.9 |
| RUCH | <i>Rubus chamaemorus</i> | 3-3-3 | 33 | 10.0 |

Stratum—SM (3-10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 10-22.5-35 | 67 | 38.7 |
| SAPU15 | <i>Salix pulchra</i> | 5-5-5 | 33 | 12.9 |

Stratum—ST (>10 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|-------------------------------------|----------------------------------|------------------|-----------------------------|
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | 18-18-18 | 33 | 24.5 |

Stratum—TR (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 10-11.7-15 | 100 | 34.2 |

Stratum—TS (<15 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 10-10-10 | 33 | 18.3 |

Stratum—TM (15-40 feet)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| PIMA | <i>Picea mariana</i> | 30-55-80 | 67 | 60.6 |

Site Tree Measurements:

| <u>Tree Species</u> | <u>Age (years)</u> | <u>Diameter (in)</u> | <u>Height (feet)</u> | <u># of Trees</u> | <u>Measurement Height</u> |
|----------------------|--------------------|----------------------|----------------------|-------------------|---------------------------|
| <i>Picea mariana</i> | 72-125-178 | 5-6-7.4 | 35-42-48 | 2 | B |

Tree Basal Area:

| <u>Min-Avg-Max</u> | <u>Number of Stands</u> |
|--------------------|-------------------------|
| 18-18-18 | 1 |

Management Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |
| Slight use | Willows | Moose | Unknown |

Notable Plants: None observed

Species Richness: Number of stops—3; plant species per stop (min-avg-max)—14-23.7-34

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

USDA, Natural Resources Conservation Service Ecological Site Characterization Report

Ecological Classification Type Name: NRCS rangeland site
Ecological Classification Name: Boreal Moss Peat Depression
Ecological Classification ID: R232XY220AK
Major Land Resource Area: 231—Interior Alaska Highlands

Physiographic Features

Landform: Thermokarst depressions of loess plains

Slope (percent): Min Max
 0 0

Elevation (feet): Min Max
 1,083 1,640

Range of Aspect Direction: All aspects

Water Table Depth (cm): Min Max
 0 25

Flooding: None

Ponding: Frequency Duration
 Frequent Very long

Runoff: Negligible

Frost-Free Days: Min Max
 75 110

Mean Annual Precipitation (inches): Low High
 9 14

Mean Annual Air Temperature (°F): Low High
 23 27

Monthly Data:

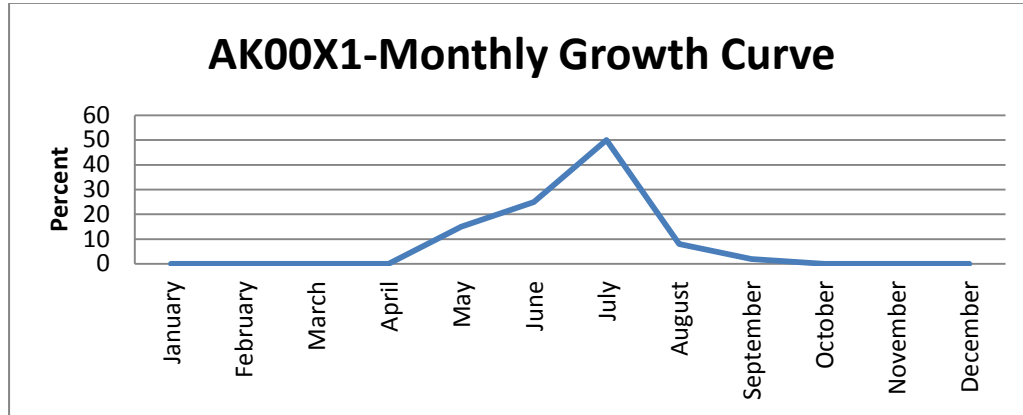
| <u>Month</u> | <u>Precipitation (in)</u> | | <u>Temperature (°F)</u> | |
|--------------|---------------------------|------------|-------------------------|-------------|
| | <u>Min</u> | <u>Max</u> | <u>Low</u> | <u>High</u> |
| January | 0 | 1 | -35 | 1 |
| February | 0 | 1 | -29 | 12 |
| March | 0 | 1 | -17 | 19 |
| April | 0 | 1 | 3 | 43 |
| May | 0 | 2 | 27 | 61 |
| June | 1 | 4 | 41 | 72 |
| July | 1 | 4 | 43 | 77 |
| August | 1 | 4 | 39 | 72 |
| September | 1 | 3 | 27 | 54 |
| October | 1 | 2 | 7 | 28 |
| November | 0 | 2 | -17 | 10 |
| December | 0 | 2 | -29 | 1 |

Plant Growth Curve

Growth Curve Number: AK00X1

Growth Curve Name: Interior

Growth Curve Description: 30 to 120 days



Representative Soil Features

MLRA Map Unit Symbols and Components (Soil Names):

D32TL1—D32-Boreal moss organic depressions

D32TL4—D32-Boreal moss organic depressions

Characteristics of Representative Soil Components

Soil Classification: Dysic Hydric Cryofibrists

Dominant Parent Material: Mossy organic material

Representative Surface Texture: Peat

Subsurface Texture Group: Not applicable

Saturated Hydraulic Conductivity: Moderately high

AWC Total (cm): Low RV High
12 24 42

pH: Low RV High
5.0 5.9 7

Effective CEC (me/100g): Low High
34.5 40


CEC (me/100g): Min RV Max
62 75.1 88.2

Organic Matter (percent): Low RV High
80 80 80

Bulk Density (1/3-Bar): Min RV Max
0.2 0.2 0.2

Plant Community Phases

| | | | | | | | | | |
|--|---|-------------|-----------|--------------------|-----------------------------|-------------|---|--|--|
| Ecological Site Description ID: | R232XY220AK | | | | | | | | |
| Ecological Dynamics of the Site: | | | | | | | | | |
| <p>This boreal ecological site is in depressions of loess plains that are attributed to thermokarst events. The underlying permafrost melts, causing the ground to slump and form wet depressions. These depressions are stable, open bodies of water with little or no hydrologic input. As a result, the succession is similar to that of a bog. With time and organic matter accumulation, permafrost likely will reform in the soil and the site progress from open water to a scrubland or black spruce woodland community. The soil in the sampled community is classified as a Cryofibrist and is composed of saturated organic matter.</p> <p>Due to limited sampling, only one community phase was developed for this ecological site. There likely are numerous communities associated with thermokarst succession, so the state-and-transition model is considered incomplete. The sampled community is considered to be a thermokarst association.</p> | | | | | | | | | |
| State and Transition Diagram: | | | | | | | | | |
| <table border="1" style="width: 100%;"> <tr> <td style="width: 30%;">1. Reference State</td> <td style="width: 40%;">Boreal moss peat depression</td> <td style="width: 30%;">R232XY220AK</td> </tr> <tr> <td colspan="3" style="text-align: center;"> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>1.1 (2KE)</p> <p>Sedge-mixed ericaceous scrub-<i>Sphagnum</i> herbaceous community</p> </div> </td> </tr> </table> | | | | 1. Reference State | Boreal moss peat depression | R232XY220AK | <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>1.1 (2KE)</p> <p>Sedge-mixed ericaceous scrub-<i>Sphagnum</i> herbaceous community</p> </div> | | |
| 1. Reference State | Boreal moss peat depression | R232XY220AK | | | | | | | |
| <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>1.1 (2KE)</p> <p>Sedge-mixed ericaceous scrub-<i>Sphagnum</i> herbaceous community</p> </div> | | | | | | | | | |
| State ID Number: | 1 | State Name: | Reference | | | | | | |
| State Narrative: | The height of medium shrubs is defined as 3 to 10 feet, low shrubs as 8 inches to 3 feet, and dwarf shrubs as less than 8 inches. | | | | | | | | |

| | | | |
|---|----------------------------|--|--|
| Phase 1.1 | |  | |
| Community Phase Number: | 1.1 | Community Phase Name: | Sedge-mixed ericaceous scrub- <i>Sphagnum</i> herbaceous community |
| Community Phase Narrative: | | | |
| <p>Ponded water covers 40% of the surface. The dominant vegetation in this plant community is unknown species of <i>Carex</i> and <i>Sphagnum</i> (total combined cover ~70%). The shrub cover is primarily in the low and dwarf strata and is a minor vegetative component (~10% cover). The shrub species are <i>Chamaedaphne calyculata</i>, <i>Andromeda polifolia</i>, <i>Vaccinium vitis-idaea</i>, <i>Rubus chamaemorus</i>, and <i>Vaccinium oxycoccos</i>. Lichen and forbs are minor vegetative components.</p> | | | |
| Community Pathways | | | |
| Pathway Number | Pathway Name & Description | | |
| 1.1a | Unknown at this time. | | |

Dynamic Soil Properties within Representative Rooting Depth

Community Phase 2KE



Rooting Depth (cm): Min RV Max
72 72 72

Restrictive Features: None recorded

Drainage Class: Very poorly drained

Surface Layer

Thickness (cm): Min RV Max
60 60 60

Texture: Peat

AWC (cm/cm): Min RV Max
0.35 0.35 0.35

pH: Min RV Max
4 4 4

Subsurface Layer

Thickness (cm): Min RV Max
12 12 12

Texture: Mucky peat

AWC (cm/cm): Min Avg Max
0.35 0.35 0.35

pH: Min RV Max
4 4 4

Influencing Water Features

NWI Code: None recorded

NWI Description: None recorded

Rosgen Classification: None recorded

Structure and CoverGround Cover (%):

| <u>Lichen</u> | <u>Bryophytes</u> | <u>Herbaceous Litter and Mulch</u> | <u>Woody Litter and Debris >1 inch</u> | <u>Bare Soil</u> | <u>Surface Rock Fragments</u> | <u>Surface Water</u> |
|---------------|-------------------|--|---|------------------|-----------------------------------|--------------------------|
| 5-5 | 50-50 | 5-5 | 0-0 | 0-0 | 0-0 | 40-40 |

Percent Canopy Cover by Height Class and Type:

| <u>Stratum Code</u> | <u>Grasses/Grasslike</u> | <u>Forbs</u> | <u>Shrubs</u> | <u>Trees</u> |
|---------------------|--------------------------|--------------|---------------|--------------|
| GM (4-24 inches) | 40-40 | --- | --- | --- |
| SD (<8 inches) | --- | --- | 1-2 | --- |
| SL (8-36 inches) | --- | --- | 3-5 | --- |

Plant Species Canopy Cover (%), Constancy (%) and Occurrence Index*:Stratum—GM (4-24 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------|----------------------------------|------------------|-----------------------------|
| CAREX | <i>Carex</i> | 40-40-40 | 100 | 63.2 |

Stratum—SD (<8 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|------------------------------|----------------------------------|------------------|-----------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | 2-2-2 | 100 | 14.1 |
| RUCH | <i>Rubus chamaemorus</i> | 2-2-2 | 100 | 14.1 |
| VAOX | <i>Vaccinium oxycoccos</i> | 1-1-1 | 100 | 10.0 |

Stratum—SL (8-36 inches)

| <u>Plant Symbol</u> | <u>Scientific Name</u> | <u>% Cover (Min-Avg-Max)</u> | <u>Constancy</u> | <u>Occurrence Index</u> |
|---------------------|--------------------------------|----------------------------------|------------------|-----------------------------|
| CHCA2 | <i>Chamaedaphne calyculata</i> | 5-5-5 | 100 | 22.4 |
| ANPO | <i>Andromeda polifolia</i> | 3-3-3 | 100 | 17.3 |

Site Tree Measurements: Not measuredTree Basal Area: Not measuredManagement Use Per Observation Site:

| <u>Use</u> | <u>Associated Plants</u> | <u>Associated Animals</u> | <u>Season</u> |
|-----------------|--------------------------|---------------------------|--------------------|
| No observed use | | | Not grazed/browsed |

Notable Plants: None observedSpecies Richness: Number of stops—1; plant species per stop (min-avg-max)—13-13-13

*Only taxa with an occurrence index of higher than 9 are included in this report, because it was not feasible to list all of the species on the sites. Species that are indicative of a site may be present in small proportions, but they were not included in the tabular data. Any species that are indicative of the ecological dynamics on a site are represented in the State and Transition Model (STM).

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. Soil properties are ascertained by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine particle-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties are shown in tables. They include engineering index properties (physical and chemical properties, and pertinent soil and water features).

Engineering Properties

[Table 7](#) gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added. For example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2001) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2000).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 7.6 centimeters in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 7.6 centimeters in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number.

Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 250 millimeters in diameter and 75 to 250 millimeters in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 7.6 centimeters in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

Erosion Properties

Table 8 shows estimates of some erosion factors that affect the potential of the soil for different uses. These estimates are given for each layer for the K factor and for the soil as a whole for the T factor, wind erodibility group, and wind erodibility index. Values are given for each soil in the survey area. Estimates are based on field observations and on test data for these soils and similar soils.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Soil erosion factors (Kw) and (Kf) indicate soil detachment by runoff and raindrop impact. These factors are used to predict the long-term average soil loss from sheet and rill erosion when crop systems and conservation techniques are used. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

The procedure for determining the Kf factor is outlined in "Predicting Soil Erosion by Water: A Guide to Conservation Planning with the Revised Universal Soil Loss Equation" (USDA, 1997).

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments. In layers that have a total rock fragment content of 15 percent or more, by volume, the Kw factor estimate is always less than the Kf factor estimate.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size. For soil layers that do not have rock fragments, the Kw and Kf factor estimates are the same.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer,

the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Physical Properties

Table 9 shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In the table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In the table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In the table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (*K_{sat}*), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33-kPa or 10-kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Permeability (K_{sat}) refers to the ability of a soil to transmit water or air. The term "permeability," as used in soil surveys, indicates saturated hydraulic conductivity. The estimates in the table indicate the rate of water movement, in micrometers per second, when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in centimeters of water per centimeter of soil for each soil layer. The capacity varies, depending on soil

properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly as a result of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design commonly is needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are expressed as *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; *high*, 6 to 9 percent; and *very high*, more than 9 percent.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained by returning crop residue to the soil. Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Chemical Properties

[Table 10](#) shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable bases that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable bases plus aluminum, expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Soil reaction is a measure of acidity or alkalinity. The pH of each soil horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil. Incorporating nitrogen fertilizer into calcareous soils helps to prevent nitrite accumulation and ammonium-N volatilization.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water.

Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste.

It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced saturated hydraulic conductivity (Ksat) and aeration, and a general degradation of soil structure.

Soil Carbon

[Table 11](#) gives estimates of soil organic carbon (SOC) and soil inorganic carbon (SIC). Both are reported in kilograms per square meter to a depth of 2 meters or to a representative depth of either hard bedrock or a cemented horizon. Values are on a whole soil basis, corrected for rock fragments.

Soil organic carbon (SOC) is carbon in soil that originated from a biological source, such as plants, animals, or micro-organisms. Soil inorganic carbon (SIC) is from a non-biological source. Calcium carbonate (CaCO₃) is the most common inorganic form of carbon in soils. SOC is found in both organic and mineral soil layers. It refers only to the carbon in soil organic matter, and it makes up about one-half of the weight of soil organic matter. The rest of the soil organic matter is mostly oxygen, nitrogen, and hydrogen.

SOC can be an indicator of overall soil fertility and soil quality that affects ecosystem function. Soil organic matter is the main reservoir for most plant nutrients, such as phosphorus and nitrogen. Managing the SOC by managing for the soil organic matter increases the content of these elements and improves soil resiliency.

Soil organic matter, the source of SOC, binds soil particles together and thus increases soil porosity and water infiltration and allows better root penetration and waterflow into the soil. Greater inflow of water reduces the hazard of erosion and the rate of surface water runoff.

Higher SOC levels improve soil quality and air and water quality. Soil acts as a filter to improve water quality. Fertile soils that support plant life remove carbon dioxide (CO₂) from the atmosphere and increase oxygen levels through photosynthesis. Maintaining the level of SOC reduces the release of carbon into the atmosphere and thus can lessen the effects of global warming.

Soil Features

[Table 12](#) gives estimates of various soil features. The estimates are used in land use planning.

A *restrictive layer* is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restricts roots or otherwise provides an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers. The table indicates the hardness and thickness of the restrictive layer, both of

which significantly affect the ease of excavation. *Depth to top* is the vertical distance from the soil surface to the upper boundary of the restrictive layer.

Subsidence is the settlement of organic soils, saturated mineral soils of very low density, or soils with permafrost. Subsidence generally results from either desiccation and shrinkage or oxidation of organic material, or both, following drainage. In soils with permafrost, subsidence can result from the removal of the insulative organic matter due to natural disturbance such as fire, mechanical disturbance as a result of commercial development or use of agricultural practices, or long-term climatic warming. Subsidence takes place gradually, usually over a period of several years. The table shows the expected initial subsidence, which usually is a result of drainage, and total subsidence, which results from a combination of factors.

Potential for frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, saturated hydraulic conductivity (Ksat), content of organic matter, and depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured, clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel or concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel or concrete in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low*, *moderate*, or *high*, is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion also is expressed as *low*, *moderate*, or *high*. It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Water Features

Table 13 gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

The *months* in the table indicate the portion of the year in which a water table, ponding, and/or flooding is most likely to be a concern.

Water table refers to a saturated zone in the soil. The table indicates, by month, depth to the top (*upper limit*) and base (*lower limit*) of the saturated zone in most years. Estimates of the upper and lower limits are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

Ponding is standing water in a closed depression. Unless a drainage system is installed, the water is removed only by percolation, transpiration, or evaporation. The table indicates *surface water depth* and the *duration* and *frequency* of ponding. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, rare, occasional, and frequent. *None* means that ponding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of ponding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of ponding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of ponding is more than 50 percent in any year).

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Duration and *frequency* are estimated. Duration is expressed as *extremely brief* if 0.1 hour to 4 hours, *very brief* if 4 hours to 2 days, *brief* if 2 to 7 days, *long* if 7 to 30 days, and *very long* if more than 30 days. Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent. *None* means that flooding is not probable; *very rare* that it is very unlikely but possible under extremely unusual weather conditions (the chance of flooding is less than 1 percent in any year); *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is 1 to 5 percent in any year); *occasional* that it occurs infrequently under normal weather conditions (the chance of flooding is 5 to 50 percent in any year); *frequent* that it is likely to occur often under normal weather conditions (the chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year); and *very frequent* that it is likely to occur very often under normal weather conditions (the chance of flooding is more than 50 percent in all months of any year).

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

Use and Management of the Soils

This section provides soil interpretations for recreational uses and suitability ratings of the major vegetation cover types for selected wildlife species and habitat elements.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil between the surface and a depth of about 152 to 213 centimeters. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Land Management

In tables 14 through 17, interpretive ratings are given for various aspects of land management. The ratings are both verbal and numerical.

Some rating class terms indicate the degree to which the soils are suited to a specified land management practice. *Well suited* indicates that the soil has features that are favorable for the specified practice and has no limitations. Good performance can be expected, and little or no maintenance is needed. *Moderately suited* indicates that the soil has features that are moderately favorable for the specified practice. One or more soil properties are less than desirable, and fair performance can be expected. Some maintenance is needed. *Poorly suited* indicates that the soil has one or more properties that are unfavorable for the specified practice. Overcoming the unfavorable properties requires special design, extra maintenance, and costly alteration. *Unsuited* indicates that the expected performance of the soil is unacceptable for the specified practice or that extreme measures are needed to overcome the undesirable soil properties.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the specified land management practice (1.00) and the point at which the soil feature is not a limitation (0.00).

Rating class terms for “fire damage” and “seedling mortality” are expressed as low, moderate, and high. Where these terms are used, the numerical ratings indicate gradations between the point at which the potential for fire damage or seedling mortality is highest (1.00) and the point at which the potential is lowest (0.00).

Rating class terms for *hazard of erosion* are expressed as slight, moderate, severe, and very severe. The numerical ratings indicate gradations between the point at which the potential for erosion is highest (1.00) and the point at which the potential is lowest (0.00).

Land Management—Planting

In [table 14](#), ratings in the columns *suitability for hand planting* and *suitability for mechanical planting* are based on slope, depth to a restrictive layer, content of sand, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, moderately suited, poorly suited, or unsuited to these methods of planting. It is assumed that necessary site preparation is completed before seedlings are planted.

Ratings in the column *soil rutting hazard* are based on depth to a water table, rock fragments on or below the surface, the Unified classification, depth to a restrictive layer, and slope. Ruts form as a result of the operation of planting equipment. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that the soil is subject to little or no rutting, *moderate* indicates that rutting is likely, and *severe* indicates that ruts form readily.

Land Management—Hazard of Erosion and Suitability for Roads

In [table 15](#), ratings in the column *hazard of erosion* are based on slope and soil erosion factor K. The soil loss is caused by sheet or rill erosion in areas where 50 to 75 percent of the surface has been exposed by different kinds of disturbance. The hazard is described as slight, moderate, severe, or very severe. A rating of *slight* indicates that erosion is unlikely under ordinary climatic conditions; *moderate* indicates that some erosion is likely and that erosion-control measures may be needed; *severe* indicates that erosion is very likely and that erosion-control measures, including revegetation of bare areas, are advised; and *very severe* indicates that significant erosion is expected, loss of soil productivity and offsite damage are likely, and erosion-control measures are costly and generally impractical.

Ratings in the column *hazard of erosion on roads and trails* are based on the soil erosion factor K, slope, and content of rock fragments. The ratings apply to unsurfaced roads and trails. The hazard is described as slight, moderate, or severe. A rating of *slight* indicates that little or no erosion is likely; *moderate* indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed; and *severe* indicates that significant erosion is expected, that the roads or trails require frequent maintenance, and that costly erosion-control measures are needed.

Ratings in the column *suitability for roads (natural surface)* are based on slope, rock fragments on the surface, plasticity index, content of sand, the Unified classification, depth to a water table, ponding, flooding, and the hazard of soil slippage. The ratings indicate the suitability for using the natural surface of the soil for roads. The soils are described as well suited, moderately suited, or poorly suited to this use.

Land Management—Site Preparation

In [table 16](#), ratings in the column *suitability for mechanical site preparation (deep)* are based on slope, depth to a restrictive layer, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 1 meter is considered in the ratings.

Ratings in the column *suitability for mechanical site preparation (surface)* are based on slope, depth to a restrictive layer, plasticity index, rock fragments on or below the surface, depth to a water table, and ponding. The soils are described as well suited, poorly suited, or unsuited to this management activity. The part of the soil from the surface to a depth of about 30 centimeters is considered in the ratings.

Land Management—Site Restoration

In [table 17](#), ratings in the column *potential for damage to soil by fire* are based on texture of the surface layer, content of rock fragments and organic matter in the surface layer, thickness of the surface layer, and slope. The soils are described as having a low, moderate, or high potential for this kind of damage. The ratings indicate an evaluation of the potential impact of prescribed fires or wildfires that are intense enough to remove the duff layer and consume organic matter in the surface layer.

Ratings in the column *potential for seedling mortality* are based on flooding, ponding, depth to a water table, content of lime, reaction, salinity, available water capacity, soil moisture regime, soil temperature regime, aspect, and slope. The soils are described as having a low, moderate, or high potential for seedling mortality.

Source of Reclamation Material, Roadfill, and Topsoil

[Table 18](#) gives information about the soils as potential sources of reclamation material, roadfill, and topsoil. Normal compaction, minor processing, and other standard construction practices are assumed.

The soils are rated *good*, *fair*, or *poor* as potential sources of reclamation material, roadfill, and topsoil. The features that limit the soils as sources of these materials are specified in the table. Numerical ratings indicate the degree to which the features limit the soils as sources of reclamation material, roadfill, or topsoil. The ratings are shown as decimal fractions ranging from 0.00 to 0.99. The lower the number, the greater the limitation.

Reclamation material is used in areas that have been drastically disturbed by surface mining or similar activities. When these areas are reclaimed, layers of soil material or unconsolidated geological material, or both, are replaced in a vertical sequence. The reconstructed soil favors plant growth. The ratings in the table do not apply to quarries and other mined areas that require an offsite source of reconstruction material. The ratings are based on the soil properties that affect erosion and stability of the surface and the productive potential of the reconstructed soil. These properties include the content of sodium, salts, and calcium carbonate; reaction; available water capacity; erodibility; texture; content of rock fragments; and content of organic matter and other features that affect fertility.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 1.8 meters high and less exacting in design than higher embankments. The ratings are for the whole soil, from the surface to a depth of about 152 centimeters. It is assumed that soil layers will be mixed when the soil material is excavated and spread.

The ratings are based on the amount of suitable material and on soil properties that affect the ease of excavation and the performance of the material after it is in place. The thickness of the suitable material is a major consideration. The ease of excavation is affected by large stones, depth to a water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the AASHTO classification of the soil) and linear extensibility (shrink-swell potential).

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 102 centimeters of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area. The ratings are based on the soil properties that affect plant growth; the ease of excavating, loading, and spreading the material; and reclamation of the borrow area. Toxic substances, soil reaction, and the properties that are inferred from soil texture, such as available water capacity and fertility, affect plant growth. The ease of excavating, loading, and spreading is affected by rock fragments, slope, depth to a water table, soil texture, and thickness of suitable

material. Reclamation of the borrow area is affected by slope, depth to a water table, rock fragments, depth to bedrock or a cemented pan, and toxic material.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Source of Sand and Gravel

[Table 19](#) gives information about the soils as potential sources of gravel and sand. Normal compaction, minor processing, and other standard construction practices are assumed.

Sand and gravel are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. Only the likelihood of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material. The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the Unified classification of the soil), the thickness of suitable material, and the content of rock fragments. If the bottom layer of the soil contains sand or gravel, the soil is considered a likely source regardless of thickness. The assumption is that the sand or gravel layer below the depth of observation exceeds the minimum thickness. The ratings are for the whole soil, from the surface to a depth of about 183 centimeters.

The soils are rated *good*, *fair*, or *poor* as potential sources of sand and gravel. A rating of *good* or *fair* means that the source material is likely to be in or below the soil. The bottom layer and the thickest layer of the soils are assigned numerical ratings. These ratings indicate the likelihood that the layer is a source of sand or gravel. The number 0.00 indicates that the layer is a poor source. The number 1.00 indicates that the layer is a good source. A number between 0.00 and 1.00 indicates the degree to which the layer is a likely source.

Recreation

The soils in the survey area are rated in [tables 20 and 21](#) according to limitations that affect their suitability for recreation. The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the recreational uses. *Not limited* indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. *Somewhat limited* indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. *Very limited* indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings in the tables indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The ratings in the tables are based on restrictive soil features, such as wetness, slope, and texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soil to absorb septic tank effluent and the ability of the soil to support vegetation also are important. Soils that are subject to flooding are

limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

The information in these tables can be supplemented by other information in this survey.

Camp and Picnic Areas

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The ratings in [table 20](#) are based on the soil properties that affect the ease of developing camp areas and the performance of the areas after development. Slope, stoniness, and depth to bedrock or a cemented pan are the main concerns affecting the development of camp areas. The soil properties that affect the performance of the areas after development are those that influence trafficability and promote the growth of vegetation, especially in heavily used areas. For good trafficability, the surface of camp areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The ratings are based on the soil properties that affect the ease of developing picnic areas and that influence trafficability and the growth of vegetation after development. Slope and stoniness are the main concerns affecting the development of picnic areas. For good trafficability, the surface of picnic areas should absorb rainfall readily, remain firm under heavy foot traffic, and not be dusty when dry. The soil properties that influence trafficability are texture of the surface layer, depth to a water table, ponding, flooding, permeability, and large stones. The soil properties that affect the growth of plants are depth to bedrock or a cemented pan, permeability, and toxic substances in the soil.

Trail Management

Foot traffic and equestrian trails for hiking and horseback riding should require little or no slope modification through cutting and filling. The ratings in [table 21](#) are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

Mountain bike and off-road vehicle trails require little or no site preparation. They are not covered with surfacing material or vegetation. Considerable compaction of the soil material is likely. The ratings are based on the soil properties that influence erodibility, trafficability, dustiness, and the ease of revegetation. These properties are stoniness, depth to a water table, ponding, slope, flooding, and texture of the surface layer.

Hydric Soils

[Table 22](#) lists the map unit components in the survey area that are rated as hydric soils. This list can help in planning land uses; however, onsite investigation is recommended to determine the hydric soils on a specific site.

The three essential characteristics of wetlands are hydrophytic vegetation, hydric soils, and wetland hydrology (Cowardin and others, 1979; U.S. Army Corps of Engineers, 1987; National Research Council, 1995; Tiner, 1985). Criteria for all of the characteristics must be met for areas to be identified as wetlands. Undrained hydric soils that have natural vegetation should support a dominant population of ecological

wetland plant species. Hydric soils that have been converted to other uses should be capable of being restored to wetlands.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 1995). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in *Soil Taxonomy* (Soil Survey Staff, 1999) and *Keys to Soil Taxonomy* (Soil Survey Staff, 2010) and in the *Soil Survey Manual* (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in *Field Indicators of Hydric Soils in the United States* (USDA, 2010).

Hydric soils are identified by examining and describing the soil to a depth of about 50 centimeters. This depth may be greater if determination of an appropriate indicator so requires. It is always recommended that soils be excavated and described to the depth necessary for an understanding of the redoximorphic processes. Then, using the completed soil descriptions, soil scientists can compare the soil features required by each indicator and specify which indicators have been matched with the conditions observed in the soil. The soil can be identified as a hydric soil if at least one of the approved indicators is present.

Map units that are dominantly made up of hydric soils may have small areas, or inclusions, of nonhydric soils in the higher positions on the landform, and map units dominantly made up of nonhydric soils may have inclusions of hydric soils in the lower positions on the landform.

The criteria for hydric soils are represented by codes in the table (for example, 2B3). Definitions for the codes are as follows:

1. All Histels except for Folistels and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. are somewhat poorly drained and have a water table at the surface (0 centimeters) during the growing season, or
 - B. are poorly drained or very poorly drained and have either:
 - 1) a water table at the surface (0 centimeters) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 50 centimeters, or
 - 2) a water table at a depth of 15 centimeters or less during the growing season if saturated hydraulic conductivity (Ksat) is equal to or greater than 42.3 micrometers per second in all layers within a depth of 50 centimeters, or
 - 3) a water table at a depth of 25 centimeters or less during the growing season if saturated hydraulic conductivity (Ksat) is less than 42.3 micrometers per second in any layer within a depth of 50 centimeters.

3. Soils that are frequently ponded for periods of long or very long duration during the growing season.
4. Soils that are frequently flooded for periods of long or very long duration during the growing season.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (Soil Survey Staff, 1999). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field, or inferred from those observations, or from laboratory measurements. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol*. An example is Inceptisol.

SUBORDER. Each order is divided into suborders, primarily on the basis of properties that influence soil genesis and are important to plant growth, or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Cryept (*Cry*, meaning cold, plus *ept*, from Inceptisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Eutrocryepts (*Eutro*, meaning high base saturation, plus *cryept*, the suborder of the Inceptisols that have a cryic temperature regime).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Typic* identifies the subgroup that typifies the great group. An example is Typic Eutrocryepts.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, thickness of the root zone, consistence, moisture equivalent, slope, cation-exchange activity classes, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is coarse-loamy, mixed, superactive Typic Eutrocryepts. This is the highest level of classification detail used in this survey.

SERIES. The series consists of soils that have similar horizons in their profile. The horizons are similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. Series are not used in this survey.

[Table 23](#) gives the classification of the soils in the survey area.

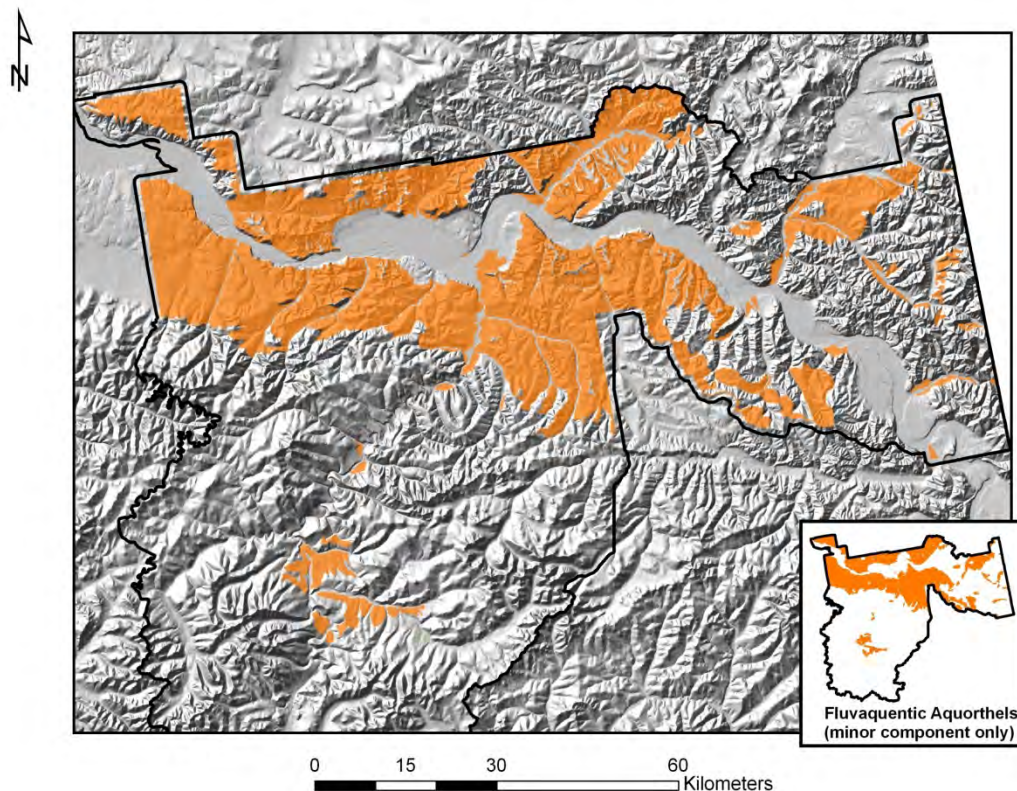
Taxonomic Units and Their Morphology

Descriptions for the higher level taxonomic units recognized in this survey area are in this section. Characteristics of the soil and the material in which it formed are identified for each taxonomic unit. A pedon, a small three-dimensional area of soil,

typical of the taxonomic unit in the survey area is described. The detailed description of each soil horizon follows standards in the *Soil Survey Manual* (Soil Survey Division Staff, 1993). Many of the technical terms used in the descriptions are defined in *Soil Taxonomy* (Soil Survey Staff, 1999) and in *Keys to Soil Taxonomy* (Soil Survey Staff, 2010). Unless otherwise indicated, colors in the descriptions are for moist soil.

Following the pedon description is the range of important characteristics of the soils in the taxonomic unit. This range is based on horizon data common to the taxonomic subgroup for the Interior Alaska Region, X1. In some cases, the pedon description contains horizons not noted in the taxonomic subgroup description. The pedon description should be considered as characteristic of the subgroup in this survey area, and it may be somewhat different than the regional taxonomic subgroup description.

Fluvaquentic Aquorthels



Taxonomic Classification

Fluvaquentic Aquorthels

Setting

Depth class: Shallow or moderately deep

Drainage class: Very poorly drained or poorly drained

Landform: Flood plains, drainageways

Parent material: Organic material over silty or loamy alluvium

Elevation: 100 to 220 meters

Slope: 1 to 7 percent

Annual precipitation: 254 to 356 millimeters

Annual temperature: -4.0 to -1 degrees C

Frost-free period: 80 to 120 days

Taxonomic Families

- Coarse-silty, mixed, superactive, acid, subgelic Fluvaquentic Aquorthels
- Coarse-silty, mixed, superactive, nonacid, subgelic Fluvaquentic Aquorthels

Representative Pedon Location

Location in the survey area: Latitude 65°25'22" north, longitude 141°4'17" west

Representative Pedon

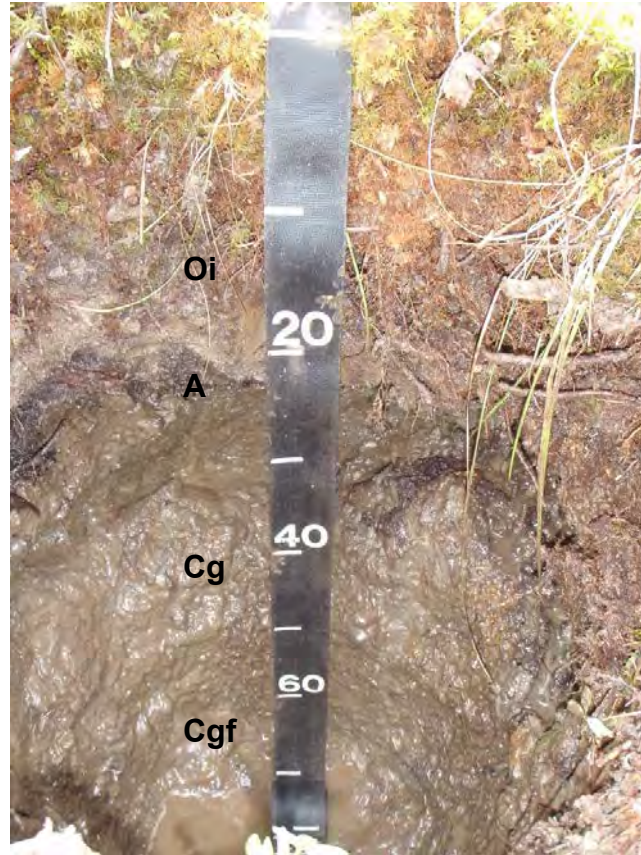
X1—Fluvaquentic Aquorthels; on a nearly level slope in a drainageway under mixed willow and alder shrub. (Colors are for moist soil; textures are apparent field textures.)

Oi—0 to 3 centimeters; very dark grayish brown (10YR 3/2), stratified, slightly decomposed plant material; common fine roots throughout; noneffervescent; very strongly acid (pH 4.8); clear smooth boundary.

A—3 to 18 centimeters; 75 percent black (10YR 2/1), stratified silt loam; 4 percent clay; weak fine granular structure; very friable, slightly sticky and nonplastic; common medium, coarse, very coarse, very fine, and fine roots throughout; 10 percent fine distinct dendritic dark yellowish brown (10YR 4/6) masses of oxidized iron and 15 percent fine distinct dendritic dark gray (2.5Y 4/1) masses of reduced iron with clear boundaries on surface along root channels; noneffervescent; strongly acid (pH 5.1); gradual wavy boundary.

Cg—18 to 49 centimeters; 85 percent very dark gray (10YR 3/1), stratified silt loam; 4 percent clay; weak fine subangular blocky structure; very friable, slightly sticky and nonplastic; common fine roots throughout; 15 percent fine distinct irregular dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries in matrix; noneffervescent; strongly acid (pH 5.3).

Cgf—49 to 152 centimeters; dark grayish brown (2.5Y 4/2) and dark brown (10YR 3/3), permanently frozen, stratified fine sand to silt; strongly acid (pH 5.3).



Range in Characteristics

Soil moisture class: Aquic

Mean annual soil temperature: -0.2 to -1.0 degrees C

Depth to permafrost: 35 to 100 centimeters

O horizon:

Color—hue of 5YR to 10YR, value of 2 or 3, chroma of 2 to 4

Texture—slightly decomposed plant material, moderately decomposed plant material

Organic matter content—60 to 90 percent

Reaction—ultra acid to neutral

Cg/O horizon (where present) and Cg horizon:

Cg color—hue of 7.5YR to 5Y, value of 3 or 4, chroma of 1 or 2

Oa color—hue of 7.5YR to 5Y, value of 2 to 4, chroma of 1 or 2

Texture—stratified silt loam to muck, mixed silt loam and muck, stratified mucky very fine sand to highly decomposed plant material, silt loam, very fine sandy loam

Clay content—0 to 10 percent

Silt content—40 to 75 percent

Sand content—15 to 60 percent

Organic matter content—10 to 20 percent

Reaction—very strongly acid to neutral

Cgf horizon:

Color—hue of 2.5Y to 5GY, value of 3 or 4, chroma of 1 or 2

Texture—silt loam, stratified very fine sand to silt

Clay content—0 to 10 percent

Silt content—40 to 75 percent
Sand content—15 to 60 percent
Reaction—very strongly acid to moderately acid

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Historthels on adjacent uplands
- X1—Typic Histoturbels on adjacent uplands
- X1—Typic Cryofluvents on higher flood plains
- X1—Aquic Cryofluvents on lower flood plains

Drainage and Saturated Hydraulic Conductivity

Drainage class: Very poorly drained or poorly drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately high in the mixed mineral and organic layers, and very low in the permafrost

Use and Vegetation

Use: Wildlife habitat

Native vegetation: Mixed alder and willow shrub

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Moderate throughout the boreal forests of interior Alaska

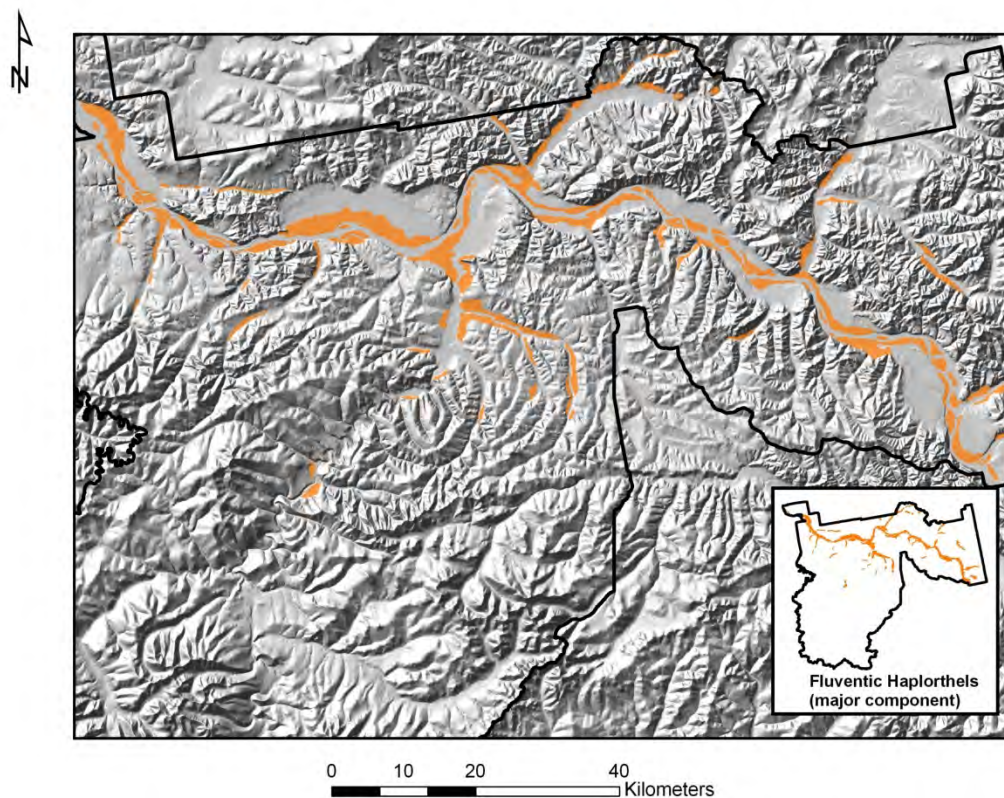
Remarks

Diagnostic horizons and features:

Aquic conditions—zone from 9 to 48 centimeters
Reduced matrix—zone from 9 to 48 centimeters
Redoximorphic concentrations—zone from 17 to 48 centimeters
Depth to permafrost—35 to 100 centimeters
Irregular decrease in organic carbon—9 to 48 centimeters
Soil temperature regime—gelic
Soil temperature class—subgelic

Note: Cg/O horizon has wavy or smooth topography associated with fluvial deposits, not cryoturbation.

Fluventic Haplorthels



Taxonomic Classification

Fluventic Haplorthels

Setting

Depth class: Shallow to deep

Drainage class: Moderately well drained or well drained

Landform: High flood plains

Parent material: Mossy organic material and/or woody organic material over sandy and silty alluvium

Elevation: 23 to 948 meters

Slope: 0 to 4 percent

Annual precipitation: 152 to 565 millimeters

Annual temperature: -7.3 to -1.5 degrees C

Frost-free period: 75 to 120 days

Taxonomic Families

- Coarse-loamy, mixed, superactive, nonacid, subgelic Fluventic Haplorthels
- Coarse-loamy, paramicaceous, superactive, nonacid, subgelic Fluventic Haplorthels
- Coarse-silty, mixed, superactive, nonacid, subgelic Fluventic Haplorthels

Representative Pedon Location

Location in the survey area: Latitude 65°24'31" north, longitude 142°24'8" west

Representative Pedon

X1—Fluventic Haplorthels; on a nearly level slope of a high flood plain with white spruce forest. (Colors are for moist soil; textures are apparent field textures.)

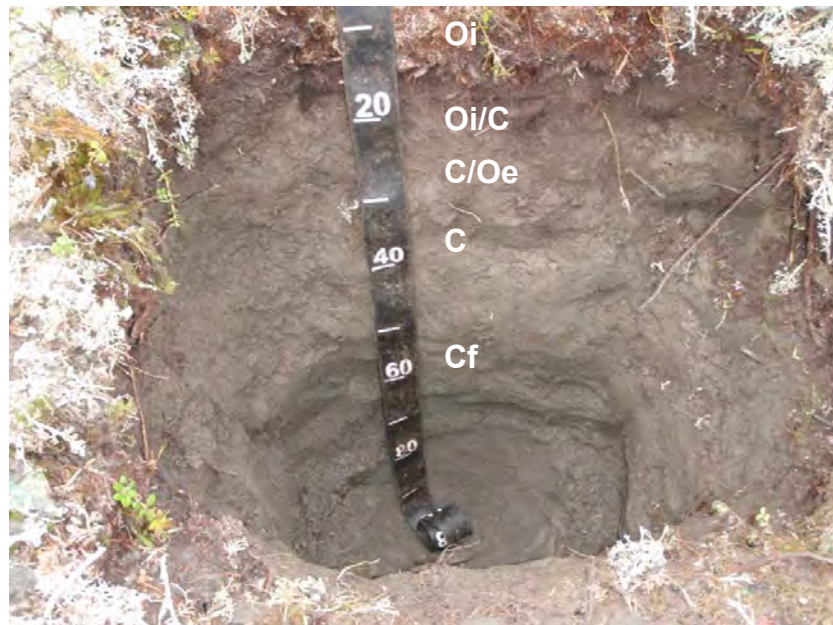
Oi—0 to 7 centimeters; very dark grayish brown (2.5Y 3/2) slightly decomposed plant material; common fine, medium, and very fine roots; strongly acid (pH 5.3); clear smooth boundary.

Oi/C—7 to 14 centimeters; 96 percent very dark gray (2.5Y 3/1) and 4 percent dark gray (10YR4/1), stratified, slightly decomposed plant material to silt loam; 23 percent sand, 75 percent silt, and 2 percent clay; very friable, nonsticky and nonplastic; common fine, medium, and very fine roots; neutral (pH 6.9); abrupt smooth boundary.

C/Oe—14 to 27 centimeters; 95 percent very dark grayish brown (10YR 3/2) and 5 percent black (10YR 2/1) silt loam and mucky peat; 29 percent sand, 67 percent silt, and 4 percent clay; weak thin platy structure parting to weak fine subangular blocky; friable, nonsticky and nonplastic; common fine, medium, coarse, and very fine roots; neutral (pH 6.6); clear wavy boundary.

C—27 to 38 centimeters; 80 percent very dark grayish brown (10YR 3/2) silt loam; 27 percent sand, 68 percent silt, and 5 percent clay; weak fine subangular blocky structure; friable, nonsticky and nonplastic; common fine, medium, coarse, and very fine roots; 20 percent medium dark brown (7.5YR 3/3) masses of oxidized iron with clear boundaries; slightly acid (pH 6.4); gradual wavy boundary.

Cf—38 to 152 centimeters; dark gray (10YR 4/1), stratified permanently frozen silt loam; 25 percent sand, 71 percent silt, and 4 percent clay; nonsticky and nonplastic; common fine and very fine roots; neutral (pH 6.9).



Range in Characteristics

Soil moisture class: Udic

Mean annual soil temperature: -0.2 to -2.0 degrees C

Depth to permafrost: 31 to 110 centimeters

O horizon and O part of C/O horizon:

Color—hue of 5YR to 10YR, value of 2 to 3, chroma of 1 to 4

Texture—moderately decomposed plant material, slightly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—ultra acid to neutral

A horizon (where present):

Color—hue of 7.5YR or 10YR, value of 2 to 3, chroma of 1 to 3

Texture—silt loam or very fine sandy loam, commonly stratified

Clay content—0 to 10 percent

Silt content—35 to 75 percent

Sand content—15 to 60 percent

Organic matter content—2 to 4 percent

Reaction—extremely acid to neutral

B horizon (where present):

Color—hue of 2.5Y, value of 4 to 6, chroma of 2 to 3

Texture—silt loam or very fine sandy loam, commonly stratified

Clay content—0 to 10 percent

Silt content—35 to 75 percent

Sand content—15 to 60 percent

Organic matter content—2 to 4 percent

Reaction—extremely acid to neutral

C horizon and C part of C/O horizon:

Color—hue of 7.5YR to N 5/0, value of 2 to 4, chroma of 1 or 2

Texture—stratified silt loam to fine sandy loam

Clay content—0 to 5 percent

Silt content—20 to 40 percent

Sand content—55 to 75 percent

Organic matter content—8 to 12 percent

Rock fragment content—0 to 5 percent rounded indurated cobbles, 0 to 5 percent rounded indurated gravel

Calcium carbonate equivalent—0 to 5 percent

Electrical conductivity (millimhos per centimeter)—0 to 2

Reaction—very strongly acid to moderately alkaline

Cf horizon:

Color—hue of 7.5YR to N 5/0, value of 2 to 4, chroma of 1 or 2

Texture—stratified silt loam to fine sandy loam

Clay content—0 to 5 percent

Silt content—20 to 40 percent

Sand content—55 to 75 percent

Organic matter content—0 to 2 percent

Rock fragment content—0 to 5 percent rounded indurated cobbles, 0 to 5 percent rounded indurated gravel

Calcium carbonate equivalent—0 to 5 percent

Electrical conductivity (millimhos per centimeter)—0 to 2

Reaction—strongly acid to moderately alkaline

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Cryofluvents on lower flood plains
- X1—Typic Historthels on stream terraces
- X1—Terric Cryohemists in depressions of flood plains

Drainage and Saturated Hydraulic Conductivity

Drainage class: Moderately well drained or well drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately high or high in the mineral layers, very low or low in the permafrost

Use and Vegetation

Use: Wildlife habitat, source of forest products

Vegetation: Boreal white spruce forest with alder, horsetail, and feathermoss; balsam poplar, willow, red osier dogwood, and prickly rose after flooding and ice bulldozing

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Moderate on high flood plains throughout interior Alaska

Remarks

Diagnostic horizons and features:

Depth to permafrost—31 to 110 centimeters

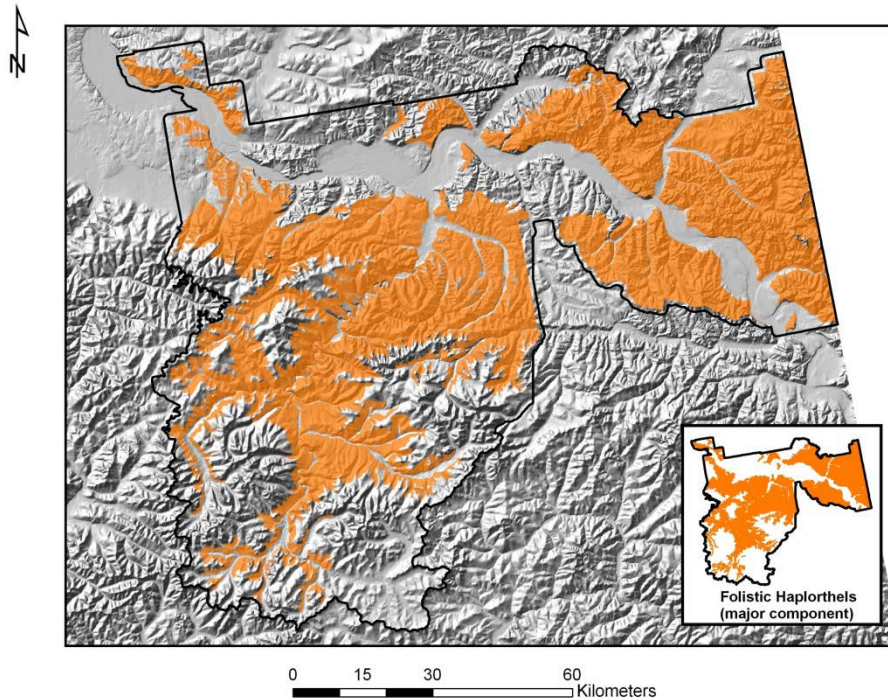
Irregular decrease in organic carbon—7 to 152 centimeters as indicated by buried organic layers and stratified textures

Soil temperature regime—gelic

Soil temperature class—subgelic

Note: Oi/C and C/Oe horizons have wavy or smooth topography associated with fluvial deposition, not cryoturbation.

Folistic Haplorthels



Taxonomic Classification

Folistic Haplorthels

Setting

Depth class: Shallow to moderately deep

Drainage class: Poorly drained or somewhat poorly drained

Landform: Escarpments, hills, mountains

Parent material: Organic material over loess over gravelly colluviums, organic material over gravelly colluvium, organic material over silty colluvium

Elevation: 200 to 1,200 meters

Slope: 5 to 70 percent

Annual precipitation: 233 to 688 millimeters

Annual temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Taxonomic Families

- Coarse-loamy, mixed, superactive, acid, subgelic Folistic Haplorthels
- Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels
- Loamy-skeletal, mixed, superactive, acid, subgelic Folistic Haplorthels

Representative Pedon Location

Location in the survey area: Latitude 65°5'0" north, longitude 141°42'1" west

Representative Pedon

Folistic Haplorthels on a steep, north-facing hill slope with stunted black spruce/ericaceous woodland. (Colors are for moist soil; textures are apparent field textures.)

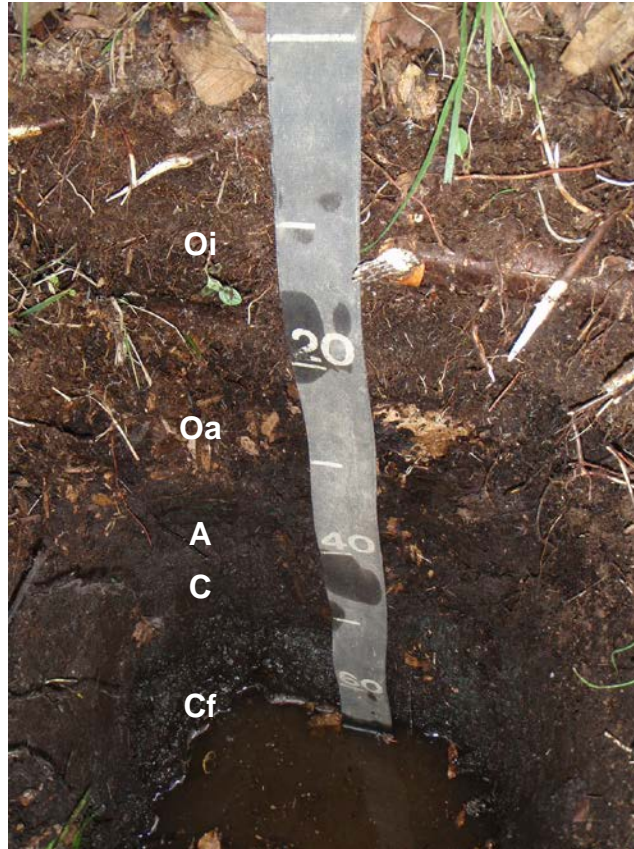
Oi—0 to 21 centimeters; brown (7.5YR 4/4) slightly decomposed plant material; common medium, coarse, very fine, and fine roots throughout; extremely acid (pH 4.0); clear smooth boundary.

Oa—21 to 29 centimeters; black (10YR 2/1) highly decomposed plant material; common medium and coarse, many very fine, and common fine roots throughout; strongly acid (pH 5.5); clear smooth boundary.

A—29 to 38 centimeters; very dark gray (2.5Y 3/1) silt loam; 4 percent clay; weak fine angular blocky structure; very friable, slightly sticky and nonplastic; common medium, very fine, and fine roots throughout; moderately acid (pH 5.7); clear wavy boundary.

C—38 to 61 centimeters; 72 percent dark grayish brown (10YR 4/2) silt loam; 5 percent clay; weak thin platy structure; very friable, slightly sticky and nonplastic; common medium, very fine, and fine roots throughout; 8 percent thin distinct platy dark gray (2.5Y 4/1) masses of reduced iron with clear boundaries in matrix and 20 percent fine distinct dendritic dark yellowish brown (10YR 4/6) masses of oxidized iron with clear boundaries on surface along root channels; 4 percent fine gravel; moderately acid (pH 5.7); clear smooth boundary.

Cf—61 to 152 centimeters; dark gray (2.5Y 4/1) permanently frozen silt loam; 5 percent clay; weak thin platy structure; very friable, slightly sticky and nonplastic; 4 percent fine gravel; neutral (pH 6.7).



Range in Characteristics

Soil moisture class: Aquic

Mean annual soil temperature: -0.2 to -2 degrees C

Depth to contrasting textural stratification: 33 to 68 centimeters

Depth to permafrost: 45 to 100 centimeters

Thickness of histic or folistic epipedon: 21 to 41 centimeters

O horizon:

Color—hue of 10YR, value of 1 to 4, chroma of 1 to 4

In lieu texture: Slightly decomposed plant material or moderately decomposed plant material

Organic matter content—60 to 90 percent

Rock fragment content—0 to 5 percent gravel

Reaction—extremely acid or very strongly acid

A horizon:

Color—hue of 10YR or 2.5Y, value of 3 or 4, chroma of 1 to 3

Texture (less than 2 millimeters)—silt, silt loam, loam, sandy loam

Clay content: 2 to 15 percent

Organic matter content—2 to 20 percent

Rock fragment content: 0 to 42 percent

Reaction—extremely acid to slightly alkaline

C horizon:

Color—hue of 10YR, 2.5Y, 5Y, or N; value of 1 to 4; chroma of 2 to 4

Texture (less than 2 millimeters)—fine sandy loam, silt loam, sandy loam, loam, very fine sandy loam

Clay content—2 to 15 percent
Rock fragment content—5 to 60 percent
Reaction—very strongly acid to slightly alkaline

Cf horizon:

Color—hue of 10YR, 2.5Y, or 5Y
Texture (less than 2 millimeters)—silt loam, silt, sandy loam, loam, fine sandy loam
Clay content—2 to 15 percent
Rock fragment content—5 to 88 percent
Reaction—very strongly acid to slightly alkaline

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Histoturbels in more gently sloping areas
- X1—Hydric Cryofibrists in depressions
- X1—Fluvaquentic Aquorthels in drainageways
- X1—Typic Haplocryepts and Typic Dystrocryepts on south-facing hill slopes and mountain slopes

Drainage and Saturated Hydraulic Conductivity

Drainage class: Poorly drained or somewhat poorly drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately high or high in the mineral layers, very low in the permafrost

Use and Vegetation

Use: Wildlife habitat, agriculture, urban development

Vegetation: Boreal taiga/ericaceous woodland and subalpine tall scrub. In the boreal life zone, wildfire and post-fire succession result in a variety of herbaceous, scrub, and hardwood vegetation types.

Distribution and Extent

Distribution: Throughout major land resource region X1

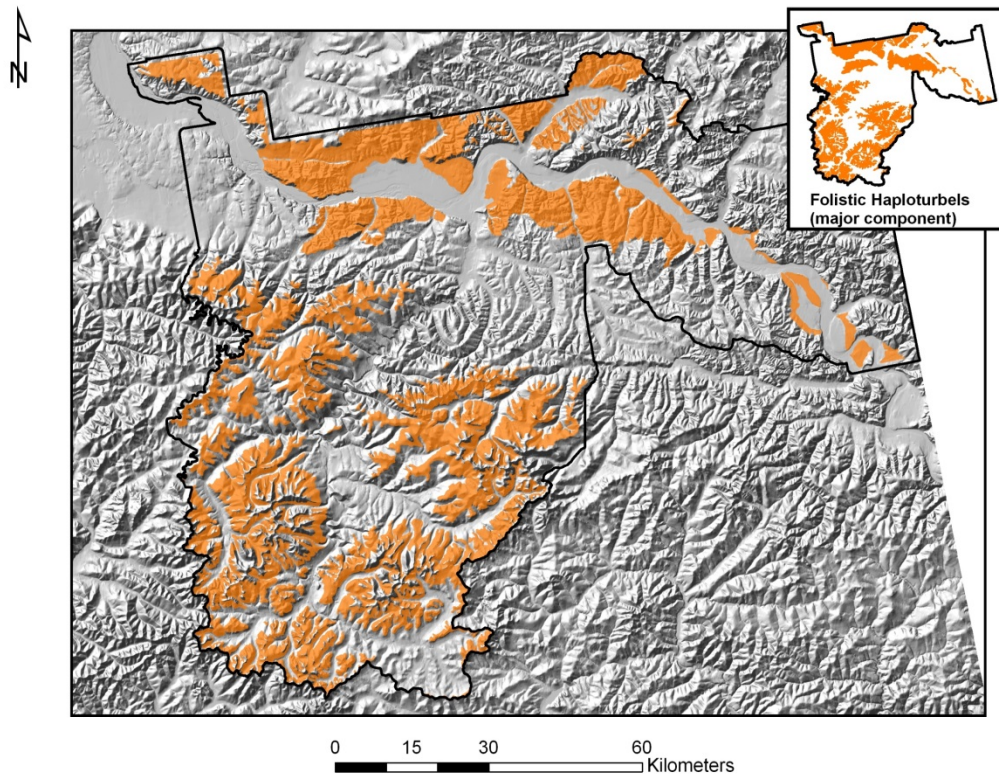
Extent: Extensive throughout the boreal forests, moderately extensive in the subalpine life zones of interior Alaska

Remarks

Diagnostic horizons and features:

Aquic conditions—zone from 38 to 61 centimeters
Depth to permafrost—61 centimeters
Folistic epipedon—zone from surface to a depth of 29 centimeters
Soil temperature regime—gelic
Soil temperature class—subgelic

Folistic Haploturbels



Taxonomic Classification

Folistic Haploturbels

Setting

Depth class: Shallow or moderately deep

Drainage class: Poorly drained or somewhat poorly drained

Landform: Alpine turf hummocks on shoulders of mountains and forested footslopes and toeslopes of hills and mountains

Parent material: Organic material over loamy cryoturbate

Elevation: 250 to 1,500 meters

Slope: 1 to 20 percent

Annual precipitation: 244 to 824 millimeters

Annual temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

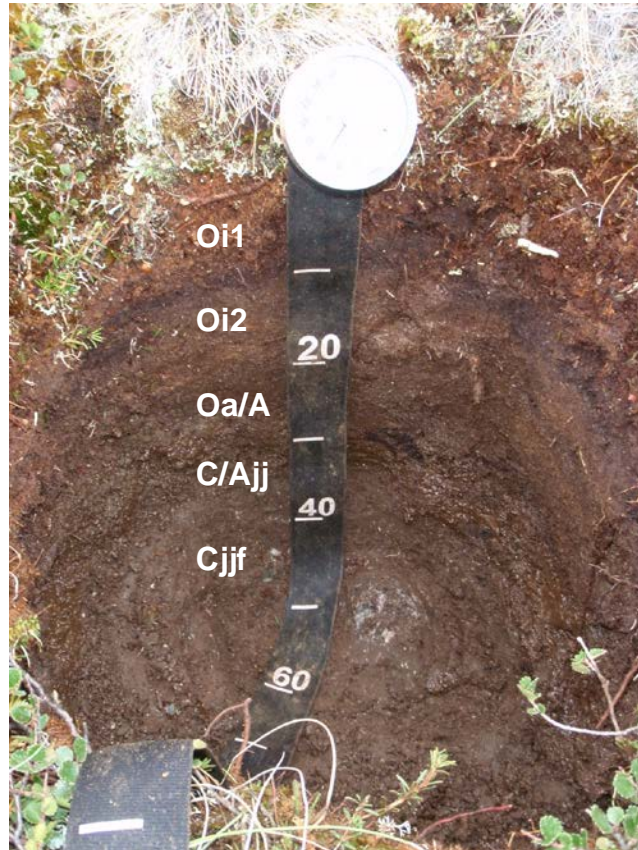
Taxonomic Families

- Coarse-loamy, mixed, superactive, nonacid, subgelic Folistic Haploturbels
- Coarse-loamy, mixed, superactive, acid, subgelic Folistic Haploturbels

Representative Pedon

Folistic Haploturbels on a steep, north-facing hill slope with stunted black spruce/ericaceous woodland. (Colors are for moist soil; textures are apparent field textures.)

- Oi1—0 to 12 centimeters; dark brown (7.5YR 3/2) slightly decomposed plant material; common medium and many very fine and fine roots; ultra acid (pH 3.4); clear smooth boundary.
- Oi2—12 to 21 centimeters; black (7.5YR 2.5/1) slightly decomposed plant material; common medium, coarse, very fine, and fine roots; extremely acid (pH 4.3); clear smooth boundary.
- Oa/A—21 to 24 centimeters; (Oa part) 85 percent very dark gray (10YR 3/1) highly decomposed plant material; and (A part) 15 percent very dark grayish brown (10YR 3/2) silt loam; 2 percent clay; massive; nonsticky and nonplastic; common medium, very fine, and fine roots; very strongly acid (pH 4.9); abrupt smooth boundary.
- C/Ajj—24 to 39 centimeters; (C part) 82 percent dark grayish brown (10YR 4/2) and (A part) 15 percent very dark grayish brown (10YR 3/2) silt loam; 2 percent clay; and 3 percent black (10YR 2/1) highly decomposed plant material; massive, nonsticky and nonplastic; common very fine roots; very strongly acid (pH 4.9); clear wavy boundary.
- Cjff—39 to 152 centimeters; dark grayish brown (10YR 4/2) permanently frozen silt loam; 4 percent clay; massive, nonsticky and nonplastic; common very fine roots; strongly acid (pH 5.4).



Representative Pedon Location

Location in the survey area: Latitude 65°9'59" north, longitude 143°9'51" west

Range in Characteristics

Soil moisture class: Aquic

Mean annual soil temperature: -0.2 to -2 degrees C

Depth to contrasting textural stratification: 33 to 68 centimeters

Depth to permafrost: 35 to 90 centimeters

Thickness of the folistic epipedon: 21 to 41 centimeters

O horizon:

Color—hue of 7.5YR or 10YR, value of 2.5 to 4, chroma of 1 to 4

In lieu texture—slightly decomposed, moderately decomposed, or highly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—extremely acid to very strongly acid

A horizon (where present) and CA_{ij} horizon:

Color—hue of 10YR or 2.5Y, value of 3 or 4, chroma of 1 to 3

Texture (less than 2 millimeters)—silt, silt loam, loam

Clay content—2 to 11 percent

Organic matter content—2 to 20 percent

Rock fragment content—0 to 5 percent

Reaction—extremely acid to neutral

C_{ij} horizon (where present) and C_{jff} horizon:

Color—hue of 10YR, 2.5Y, or 5Y, or neutral; value of 1 to 4, chroma of 2 to 4

Texture (less than 2 millimeters)—silt loam, sandy loam, silt, coarse sandy loam

Clay content—2 to 11 percent

Rock fragment content—3 to 40 percent

Reaction—extremely acid to neutral

Geographically Associated Soils in the Interior Alaska Resource Region (X1)

- X1—Typic Histoturbels in more gently sloping areas
- X1—Hydric Cryofibrists in depressions
- X1—Fluvaquentic Aquorthels in drainageways
- X1—Typic Haplocryepts and Typic Dystrocryepts on south-facing hill slopes and mountain slopes

Drainage and Saturated Hydraulic Conductivity

Drainage class: Poorly drained or somewhat poorly drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately high or high in the mineral layers, very low in the permafrost

Use and Vegetation

Use: Wildlife habitat

Vegetation: Boreal taiga/ericaceous woodland and subalpine tall scrub. In the boreal life zone, wildfire and post-fire succession result in a variety of herbaceous, scrub, and hardwood vegetation types.

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Extensive throughout the boreal forests, minor in the alpine life zones of interior Alaska

Remarks

Diagnostic horizons and features:

Aquic conditions—zone from 26 to 39 centimeters

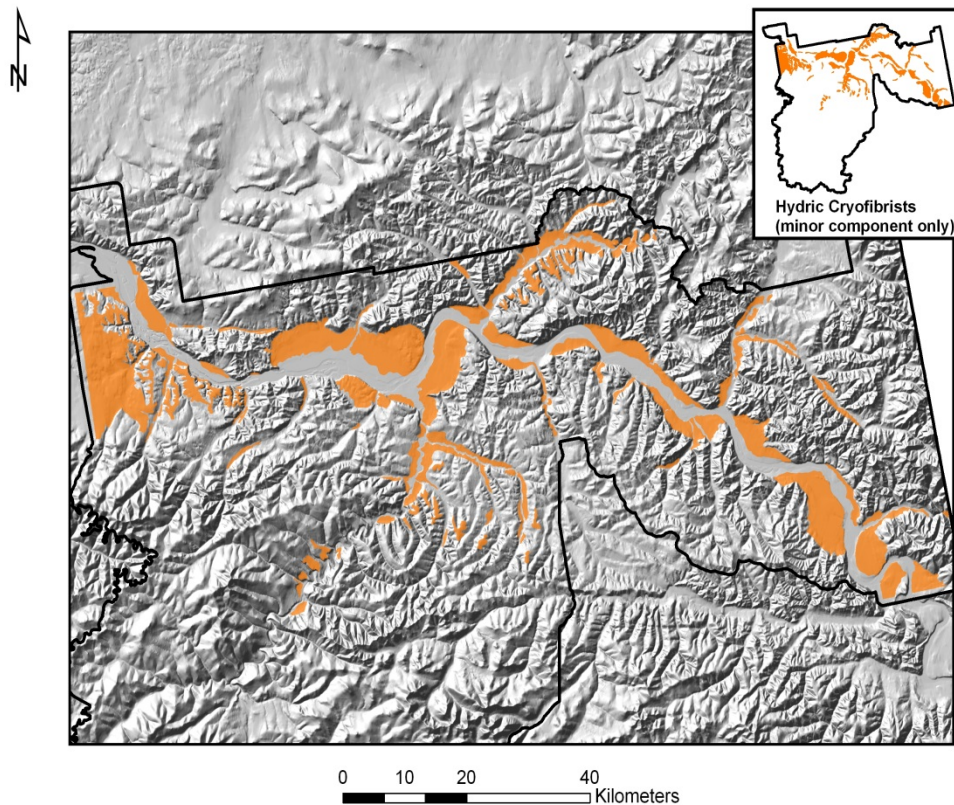
Depth to permafrost—39 centimeters

Folistic epipedon—zone from the surface to a depth of 24 centimeters

Soil temperature regime—gelic

Soil temperature class—subgelic

Hydric Cryofibrists



Taxonomic Classification

Hydric Cryofibrists

Setting

Depth class: Very deep

Drainage class: Very poorly drained

Landform: Depressions of hills and eolian plains

Parent material: Mossy organic material and/or grassy organic material

Elevation: 34 to 750 meters

Slope: 0 to 1 percent

Annual precipitation: 233 to 728 millimeters

Annual temperature: -5 to -1 degrees C

Frost-free period: 50 to 120 days

Taxonomic Families

- Dysic Hydric Cryofibrists
- Euic Hydric Cryofibrists

Representative Pedon Location

Location in the survey area: Latitude 65°6'7" north, longitude 142°40'37" west

Representative Pedon

Hydric Cryofibrists on a level slope in a depression of an eolian plain with sedge/sphagnum moss bog. (Colors are for saturated soil.)

Oi—0 to 62 centimeters; dark brown (7.5YR 3/4) peat; common fine and very fine roots throughout; noneffervescent; extremely acid (pH 3.8); clear smooth boundary.

Oe—62 to 72 centimeters; dark yellowish brown (10YR 4/4) mucky peat; common very fine roots throughout; noneffervescent; extremely acid (pH 4.1); clear smooth boundary.

W—72 to 103 centimeters; water; very strongly acid (pH 4.6).

Oe'—103 to 124 centimeters; dark yellowish brown (10YR 3/4) mucky peat; noneffervescent; extremely acid (pH 4.3); clear smooth boundary.

Oa—124 to 160 centimeters; very dark brown (10YR 2/2) muck; noneffervescent; extremely acid (pH 3.9); clear smooth boundary.

Cg—160 to 180 centimeters; 85 percent dark gray (10YR 4/1) silt loam; 35 percent sand, 61 percent silt, and 4 percent clay; moderate medium subangular blocky structure; friable, nonsticky and nonplastic; 5 percent fine distinct irregular dark gray (2.5Y 4/1) masses of reduced iron and 10 percent fine distinct irregular brown (7.5YR 4/4) masses of oxidized iron with clear boundaries in matrix; noneffervescent; strongly acid (pH 5.3).

Range in Characteristics

Soil moisture class: Aquic

Mean annual soil temperature: 1.5 to 3.5 degrees C

Depth to water layer: 45 to 110 centimeters

Depth to mineral layer: 82 to 152 centimeters or more

Thickness of histic epipedon: 45 to 110 centimeters

Oi horizon:

Color—hue of 7.5YR or 10YR, value of 3 to 5, chroma of 2 to 6

Organic matter content—70 to 95 percent

Reaction—extremely acid to slightly acid

C horizon:

Color—hue of 10YR or 2.5Y, value of 3 or 4, chroma of 1 or 2

Clay content—0 to 10 percent

Sand content—30 to 40 percent

Silt content—50 to 70 percent

Organic matter content—0 to 1 percent

Reaction—extremely acid to slightly acid

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Histoturbels on uplands adjacent to depressions
- X1—Glacic Folistels on rims and mounds of depressions
- X1—Typic Historthels on uplands adjacent to depressions

Drainage and Saturated Hydraulic Conductivity

Drainage class: Very poorly drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately low to moderately high in the mineral layers

Use and Vegetation

Use: Wildlife habitat

Vegetation: Sedge-Sphagnum moss herbaceous and riparian community

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Moderate throughout interior Alaska

Remarks

Diagnostic horizons and features:

Fibric soil material—zone from surface to a depth of 62 centimeters

Histic epipedon—zone from surface to a depth of 72 centimeters

Hemic soil material—zones from 62 to 72 centimeters and 103 to 124 centimeters

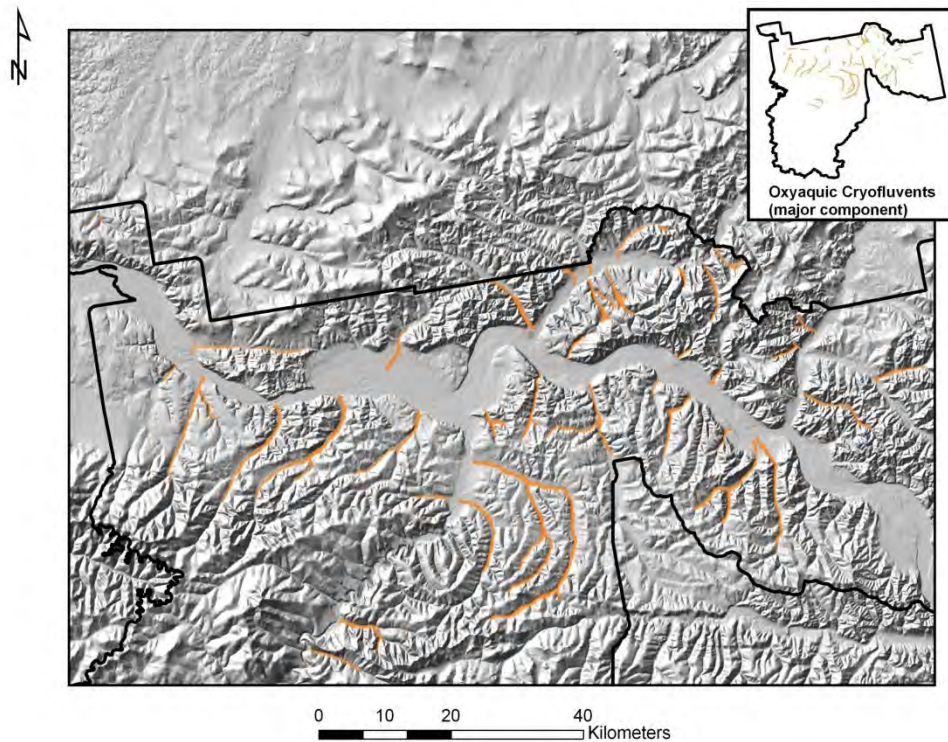
Sapric soil material—zone from surface to a depth of 124 to 160 centimeters

Aquic conditions—zone from surface to a depth of 180 centimeters

Redoximorphic concentrations—zone from 160 to 180 centimeters

Redoximorphic depletions with chroma of 2 or less—zone from 160 to 180 centimeters

Oxyaquic Cryofluvents



Taxonomic Classification

Oxyaquic Cryofluvents

Setting

Depth class: Very deep

Drainage class: Moderately well drained or somewhat poorly drained

Landform: Flood plains, drainageways

Parent material: Loamy alluvium over sandy and gravelly alluvium

Elevation: 307 to 970 meters

Slope: 3 to 20 percent

Annual precipitation: 244 to 688 millimeters

Annual temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Taxonomic Families

- Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryofluvents
- Sandy-skeletal, mixed Oxyaquic Cryofluvents

Representative Pedon Location

Location in the survey area: Latitude 65°21'44" north, longitude 141°41'27" west

Representative Pedon

Oxyaquic Cryofluvents in a sloping drainageway under mixed willow and alder shrub. (Colors are for moist soil; textures are apparent field textures.)

- C—0 to 32 centimeters; very dark gray (2.5Y 3/1) fine sandy loam; 1 percent clay; massive; very friable; common very coarse, very fine, and fine roots throughout; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.
- Oi—32 to 35 centimeters; black (10YR 2/1), stratified peat; common very coarse, very fine, and fine roots throughout; noneffervescent; neutral (pH 7.2); abrupt smooth boundary.
- C1—35 to 54 centimeters; black (2.5Y 2.5/1), stratified silt loam; 3 percent clay; massive; very friable; common very fine roots throughout; noneffervescent; neutral (pH 7.1).
- C2—54 to 152 centimeters; very dark gray (2.5Y 3/1), stratified very gravelly sandy loam; 5 percent clay; massive; very friable; common very fine roots throughout; noneffervescent; neutral (pH 7.1).



Range in Characteristics

Soil moisture class: Udic

Mean annual soil temperature: -0.2 to 1.0 degrees C

Depth to contrasting textural stratification: 0 to 25 centimeters or more

Thickness of ochric epipedon: 0 to 25 centimeters

O horizon (where present):

Color—value of 2 or 3, chroma of 1 to 4

Texture—moderately decomposed plant material, slightly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—strongly acid to neutral

AC horizon (where present):

Color—hue of 10YR to 5Y, value of 2 to 7, chroma of 1 to 6

Texture—stratified sand to silt, extremely cobbly coarse sand, extremely gravelly loamy coarse sand, stratified very fine sand to silt, stratified highly decomposed plant material to sand to silt

Clay content—0 to 10 percent

Silt content—0 to 30 percent

Sand content—60 to 95 percent

Organic matter content—0 to 2 percent

Rock fragment content—0 to 60 percent rounded indurated cobbles, 0 to 35 percent rounded indurated gravel

Calcium carbonate equivalent—0 to 5 percent

Electrical conductivity (millimhos per centimeter)—0 to 1.5

Reaction—very strongly acid to moderately alkaline

2C horizon (where present) and C horizon:

Color—hue of 10YR to 5Y, value of 2.5 to 7, chroma of 1 to 4

Texture—extremely cobbly coarse sand, extremely gravelly loamy coarse sand, extremely cobbly sand, extremely cobbly loamy coarse sand, extremely cobbly loamy sand

Clay content—0 to 5 percent

Silt content—0 to 15 percent

Sand content—75 to 95 percent

Rock fragment content—0 to 35 percent rounded indurated cobbles, 20 to 65 percent rounded indurated gravel

Calcium carbonate equivalent—0 to 5 percent

Electrical conductivity (millimhos per centimeter)—0 to 6

Reaction—strongly acid to moderately alkaline

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Histoturbels on adjacent uplands
- X1—Typic Haplocrypts on more steeply sloping, south aspects
- X1—Hydric Cryofibrists in depressions of gently sloping uplands

Drainage and Saturated Hydraulic Conductivity

Drainage class: Moderately well drained or somewhat poorly drained

Saturated hydraulic conductivity: Very high in the organic layers (where present), moderately high to very high in the stratified sandy and silty surface layer (where present), very high in the sandy and gravelly substratum

Use and Vegetation

Use: Wildlife habitat

Native vegetation: Mixed medium to tall alder and willow scrub and white spruce woodland

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Moderately extensive throughout the boreal forest life zones in interior Alaska

Remarks

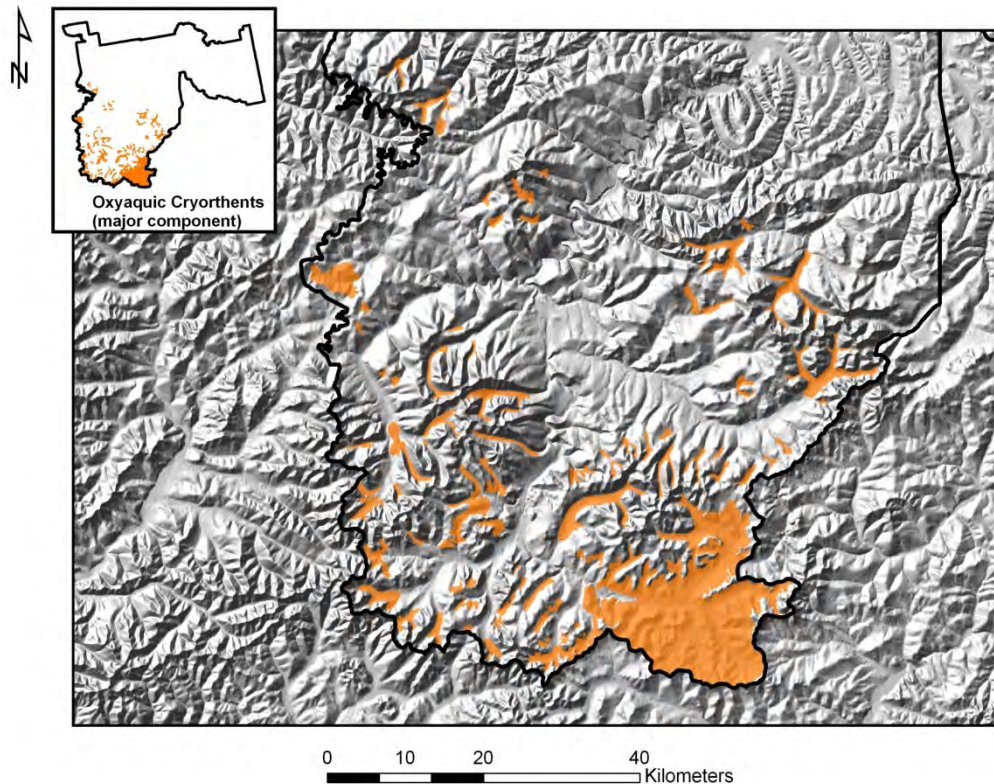
Diagnostic horizons and features:

Soil temperature regime—cryic

Organic carbon—irregular decrease assumed based on buried organic layers and stratification

Oxyaquic conditions—within 1 meter of the surface

Oxyaquic Cryorthents



Taxonomic Classification

Oxyaquic Cryorthents

Setting

Depth class: Very deep

Drainage class: Moderately well drained or somewhat poorly drained

Landform: Flood plains, drainageways

Parent material: Loamy alluvium over sandy and gravelly alluvium

Elevation: 91 to 989 meters

Slope: 0 to 20 percent

Annual precipitation: 244 to 989 millimeters

Annual temperature: -7 to -1 degrees C

Frost-free period: 20 to 110 days

Taxonomic Family

- Sandy-skeletal, mixed Oxyaquic Cryorthents

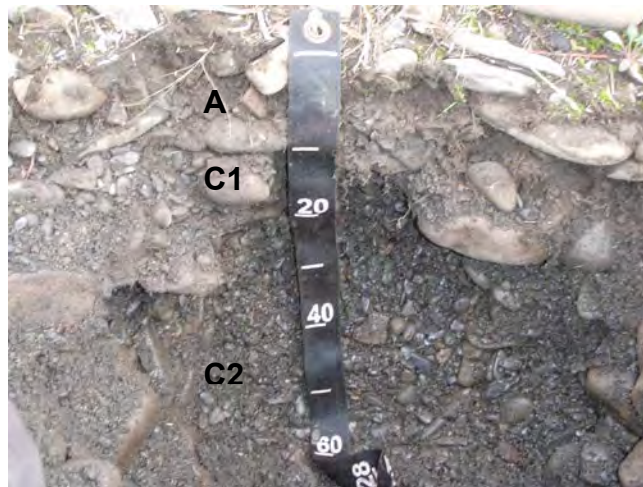
Representative Pedon

Oxyaquic Cryorthents on a nearly level slope of a flood plain under mixed willow and alder shrub. (Colors are for moist soil; textures are apparent field textures.)

A—0 to 3 centimeters; black (10YR 2/1) silt loam; 40 percent sand, 57 percent silt, and 3 percent clay; weak fine subangular blocky structure; very friable, nonsticky and nonplastic; common fine roots; electrical conductivity 6.4 millimhos per centimeter; noneffervescent; neutral (pH 6.6); clear wavy boundary.

C1—3 to 23 centimeters; very dark gray (5Y 3/1), stratified very cobbly loamy coarse sand; 83 percent sand, 14 percent silt, and 3 percent clay; weak fine angular blocky structure; very friable, nonsticky and nonplastic; common fine, medium, and very fine roots; 45 percent flat angular 2- to 150-millimeter unspecified fragments; electrical conductivity 5.6 millimhos per centimeter; very slightly effervescent; neutral (pH 6.8); gradual wavy boundary.

C2—23 to 152 centimeters; very dark gray (5Y 3/1), stratified extremely cobbly loamy coarse sand; 83 percent sand, 14 percent silt, and 3 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; common fine and very fine roots; 10 percent flat angular 150- to 380-millimeter unspecified fragments and 55 percent flat angular 2- to 150-millimeter unspecified fragments; electrical conductivity 5.9 millimhos per centimeter; very slightly effervescent; neutral (pH 7.2).



Representative Pedon Location

Location in the survey area: Latitude 65°24'14" north, longitude 142°38'38" west

Range in Characteristics

Soil moisture class: Udic

Mean annual soil temperature: -0.2 to 1.0 degree C

Depth to contrasting textural stratification: 0 to 25 centimeters or more

Thickness of ochric epipedon: 0 to 25 centimeters

O horizon (where present):

Color—value of 2 or 3, chroma of 1 to 4

Texture—moderately decomposed plant material, slightly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—strongly acid to neutral

AC horizon:

Color—hue of 10YR to 5Y, value of 2 to 7, chroma of 1 to 6

Texture—stratified sand to silt, extremely cobbly coarse sand, extremely gravelly loamy coarse sand, stratified very fine sand to silt, stratified highly decomposed plant material to sand to silt

Clay content—0 to 10 percent

Silt content—0 to 30 percent

Sand content—60 to 95 percent

Organic matter content—0 to 2 percent

Rock fragment content—0 to 60 percent rounded indurated cobbles, 0 to 35 percent rounded indurated gravel

Calcium carbonate equivalent—0 to 5 percent

Electrical conductivity (millimhos per centimeter)—0 to 1.5

Reaction—very strongly acid to moderately alkaline

2C horizon (where present) and C horizon:

Color—hue of 10YR to 5Y, value of 2.5 to 7, chroma of 1 to 4

Texture—extremely cobbly coarse sand, extremely gravelly loamy coarse sand, extremely cobbly sand, extremely cobbly loamy coarse sand, extremely cobbly loamy sand

Clay content—0 to 5 percent

Silt content—0 to 15 percent

Sand content—75 to 95 percent

Rock fragment content—0 to 35 percent rounded indurated cobbles, 20 to 65 percent rounded indurated gravel

Calcium carbonate equivalent—0 to 5 percent

Electrical conductivity (millimhos per centimeter)—0 to 6

Reaction—strongly acid to moderately alkaline

Geographically Associated Soils in the Interior Alaska Resource Region (X1)

- X1—Typic Cryorthents on slightly higher flood plains
- X1—Typic Cryofluvents on higher flood plains
- X1—Fluventic Haplorthels on highest flood plains
- X1—Terric Cryofibrists in depressions of flood plains

Drainage and Saturated Hydraulic Conductivity

Drainage: Moderately well drained or somewhat poorly drained

Saturated hydraulic conductivity: Very high in the organic layers (where present), moderately high to very high in the stratified sandy and silty surface layers (where present), very high in the gravelly substratum

Use and Vegetation

Use: Wildlife habitat

Native vegetation: Mixed medium to tall alder and willow scrub and white spruce woodland

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Moderately extensive throughout the boreal forest life zones in interior Alaska

Remarks

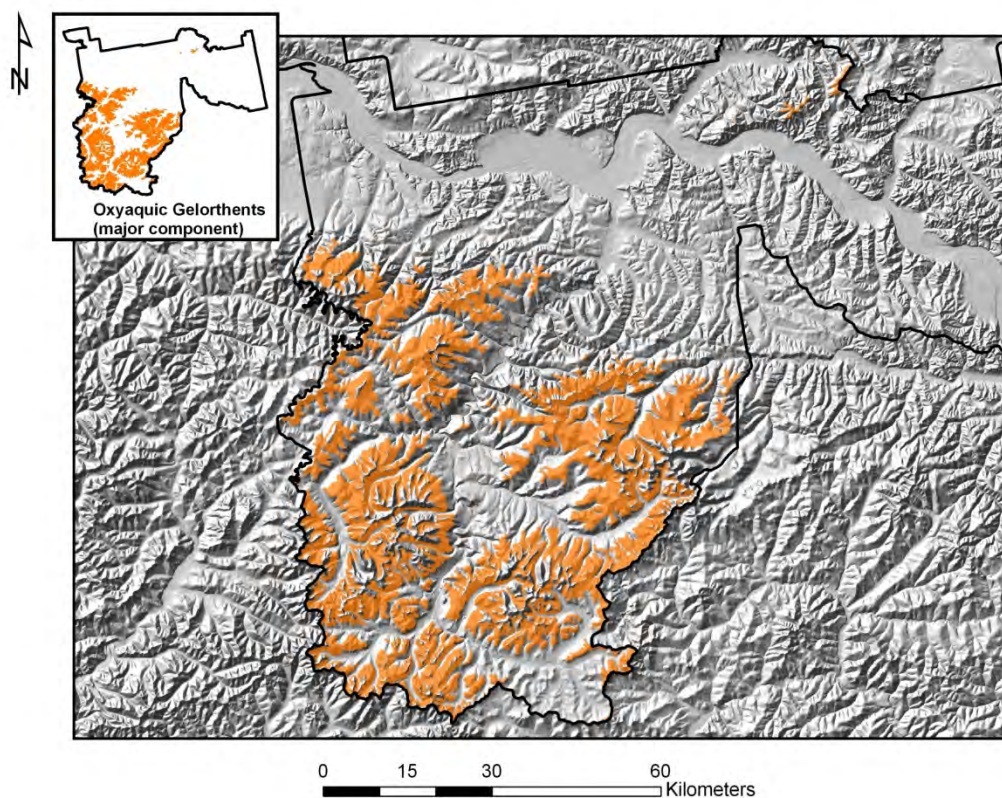
Diagnostic horizons and features:

Ochric epipedon—0 to 3 centimeters

Soil temperature regime—cryic

Oxyaquic conditions—zone from 75 to 152 centimeters (estimated)

Oxyaquic Gelorthents



Taxonomic Classification

Oxyaquic Gelorthents

Setting

Depth class: Very deep

Drainage class: Somewhat poorly drained

Landform: Flood plains, solifluction lobes on mountains

Parent material: Sandy and gravelly alluvium, sandy and silty alluvium over sandy and gravelly alluvium, gravelly cryoturbate

Elevation: 609 to 1,500 meters

Slope: 0 to 5 percent

Annual precipitation: 372 to 1,229 millimeters

Annual temperature: -8 to -2 degrees C

Frost-free period: 50 to 80 days

Taxonomic Families

- Sandy-skeletal, mixed, subgelic Oxyaquic Gelorthents
- Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid, subgelic Oxyaquic Gelorthents
- Loamy-skeletal, mixed, superactive, nonacid, subgelic Oxyaquic Gelorthents
- Loamy-skeletal, mixed, superactive, acid, subgelic Oxyaquic Gelorthents

Representative Pedon Location

Location in the survey area: Latitude 65°5'34" north, longitude 143°23'15" west

Representative Pedon

Oxyaquic Gelorthents on a nearly level slope of a flood plain under mixed willow and alder shrub. (Colors are for moist soil; textures are apparent field textures.)

Oi—0 to 3 centimeters; slightly decomposed plant material; clear irregular boundary.

AOa—3 to 17 centimeters; slightly decomposed plant material and very fine sandy loam; 55 percent sand, 40 percent silt, and 5 percent clay; friable; noneffervescent; slightly acid (pH 6.5); clear irregular boundary.

2C—17 to 152 centimeters; dark olive gray (5Y 3/2) extremely cobbly loamy coarse sand; 85 percent sand, 12 percent silt, and 3 percent clay; loose; 5 percent nonflat 250- to 600-millimeter granite fragments, 30 percent nonflat 2- to 75-millimeter granite fragments, and 30 percent nonflat 75- to 250-millimeter granite fragments; noneffervescent; neutral (pH 6.7).



Range in Characteristics

Soil moisture class: Oxyaquic

Depth to contrasting textural stratification: 2 to 12 centimeters

O horizon and O part of O/A and C/O horizons (where present):

Color—hue of 2.5YR to 10YR, value of 2 to 3, chroma of 1 to 4

Texture—moderately decomposed or slightly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—extremely acid to neutral

A/C and A horizons and A part of O/A horizon (where present):

Color—hue of 7.5YR to 2.5Y, value of 2 to 5, chroma of 1 to 4

Texture—stratified sand to silt, silt loam

Clay content—0 to 10 percent

Silt content—10 to 75 percent

Sand content—15 to 85 percent

Organic matter content—2 to 6 percent

Rock fragment content—0 to 5 percent rounded indurated gravel

Electrical conductivity (millimhos per centimeter)—0 to 0.5

Reaction—extremely acid to slightly alkaline

C horizon and C part of C/O horizon (where present):

Color—hue of 7.5YR to 5Y, value of 2.5 to 7, chroma of 1 to 6

Texture—stratified sand to silt

Clay content—0 to 10 percent

Silt content—10 to 35 percent

Sand content—60 to 85 percent

Organic matter content—1 to 4 percent

Rock fragment content—0 to 5 percent rounded indurated gravel

Calcium carbonate equivalent—0 to 5 percent

Electrical conductivity (millimhos per centimeter)—0 to 2

Reaction—very strongly acid to moderately alkaline

2C horizon (where present):

Color—hue of 10YR to 5Y, value of 2.5 to 7, chroma of 1 to 6

Texture—very cobbly loamy coarse sand, extremely gravelly coarse sand, extremely cobbly sand, extremely gravelly loamy coarse sand, extremely cobbly sand, very cobbly sand, very cobbly loamy coarse sand

Clay content—0 to 5 percent

Silt content—0 to 15 percent

Sand content—75 to 95 percent

Rock fragment content—20 to 65 percent rounded indurated gravel, 0 to 45 percent rounded indurated cobbles

Calcium carbonate equivalent—0 to 5 percent

Electrical conductivity (millimhos per centimeter)—0 to 2

Reaction—strongly acid to moderately alkaline

Geographically Associated Soils in the Interior Alaska Resource Region (X1)

- X1—Typic Gelorthents on flood plains
- X1—Typic Gelifluvents on flood plains
- X1—Typic Haplogelepts on mountains

Drainage and Saturated Hydraulic Conductivity

Drainage class: Somewhat poorly drained

Saturated hydraulic conductivity: Very high in the organic layers, where present; moderately high to very high in the silty or stratified sandy and silty layers; moderately low to high in the gravelly cryoturbate, where present; and very high in the sandy and gravelly substratum, where present

Use and Vegetation

Use: Wildlife habitat

Native vegetation: Alpine willow scrub along flood plains, alpine shrub birch and ericaceous shrub scrub on solifluction lobes of mountains

Distribution and Extent

Distribution: Throughout alpine areas of major land resource region X1

Extent: Minor in the alpine life zones in interior Alaska

Remarks

Diagnostic horizons and features:

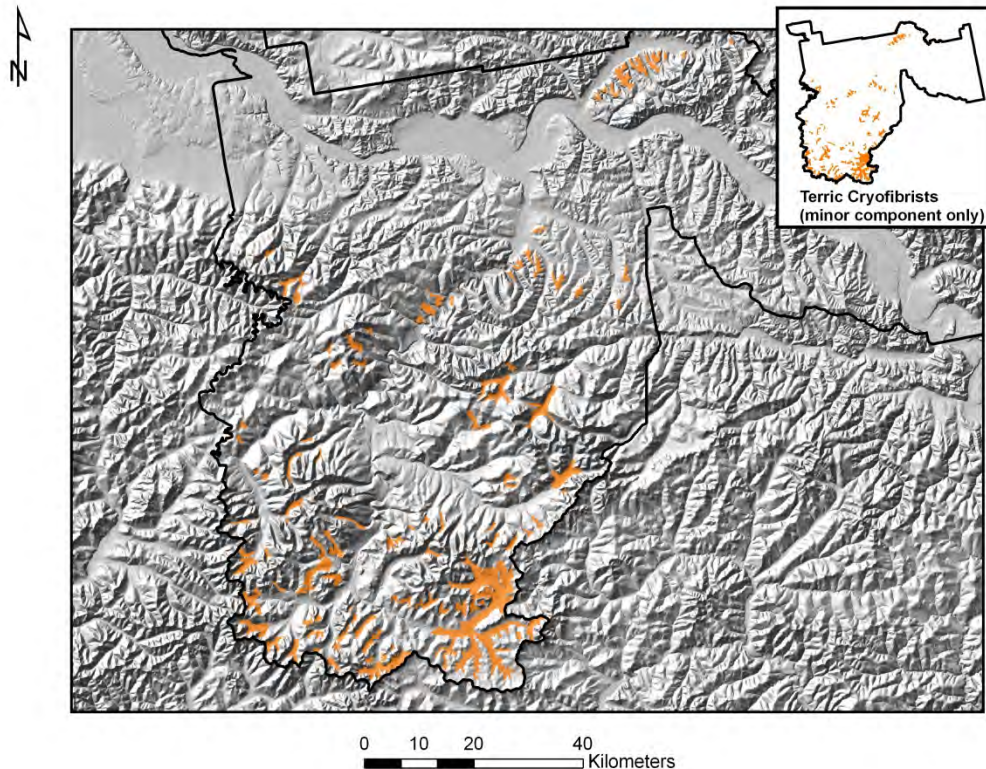
Ochric epipedon—zone from surface to a depth of 20 centimeters

Assumed irregular decrease in organic carbon based on stratification—0 to 20 centimeters

Soil temperature regime—gelic

Soil temperature class—subgelic

Terric Cryofibrists



Taxonomic Classification

Terric Cryofibrists

Setting

Depth class: Very deep

Drainage class: Very poorly drained

Landform: Depressions of flood plains, alluvial fans, and stream terraces; toeslopes of mountains and hills; thermokarst depressions of plains

Parent material: Organic material over silty alluvium or eolian deposits, organic material over gravelly till or outwash deposits

Elevation: 121 to 366 meters

Slope: 0 to 1 percent

Annual precipitation: 254 to 356 millimeters

Annual temperature: -4 to -2 degrees C

Frost-free period: 60 to 135 days

Taxonomic Families

- Loamy, mixed, euic Terric Cryofibrists
- Loamy, mixed, dysic Terric Cryofibrists

Representative Pedon Location

Location in the survey area: Latitude 64°33'25" north, longitude 143°9'3" west

Representative Pedon

X1—Terric Cryofibrists; in a swale on a toeslope of a hill with graminoid wet meadow vegetation. (Colors are for saturated soil; textures are apparent field textures.)

Oi—0 to 44 centimeters; very dark grayish brown (10YR 3/2) peat; common fine, medium, and coarse roots throughout and many very fine roots throughout; noneffervescent; neutral (pH 6.7); clear smooth boundary.

Oe/Cg—44 to 63 centimeters; olive brown (2.5Y 4/3), stratified silt loam to mucky peat; common fine, medium, and very fine roots throughout; noneffervescent; neutral (pH 6.6); clear smooth boundary.

Cg—63 to 152 centimeters; dark gray (5Y 4/1) silt loam; 35 percent sand, 60 percent silt, and 5 percent clay; slightly sticky and nonplastic; common fine and very fine roots throughout; 10 percent nonflat 76- to 250-millimeter unspecified fragments; noneffervescent; neutral (pH 6.7).



Range in Characteristics

Soil moisture class: Aquic

Mean annual soil temperature: 1.5 to 2.5 degrees C

Depth to mineral soil: 41 to 100 centimeters

Thickness of histic epipedon: 41 to 100 centimeters

O horizon and O part of Cg/O horizon (where present):

Color—hue of 7.5YR to N 3/0, value of 2 to 4, chroma of 1 to 4

Texture—peat, peat with small amounts of very fine sandy loam or silt loam

Organic matter content—70 to 95 percent

Reaction—extremely acid to neutral

Cg horizon and Cg part of Cg/O horizon (where present):

Color—hue of 2.5Y to N 4/0, value of 2 to 4, chroma of 1 or 2

Texture—silt loam, very fine sandy loam, stratified fine sand to silt

Clay content—0 to 10 percent

Silt content—55 to 75 percent

Sand content—15 to 35 percent

Organic matter content—0 to 2 percent

Reaction—very strongly acid to slightly acid

Geographically Associated Soils in the Interior Alaska Resource Region (X1)

- X1—Typic Cryofluvents on flood plains
- X1—Oxyaquic Cryorthents on flood plains

- X1—Typic Historthels on stream terraces
- X1—Typic Histoturbels on stream terraces, plains, mountains, and hills

Drainage and Saturated Hydraulic Conductivity

Drainage class: Very poorly drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately high to very high in the mineral soil

Use and Vegetation

Use: Wildlife habitat

Vegetation: Sedge-Sphagnum moss herbaceous and riparian community

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Minor throughout interior Alaska

Remarks

Diagnostic horizons and features:

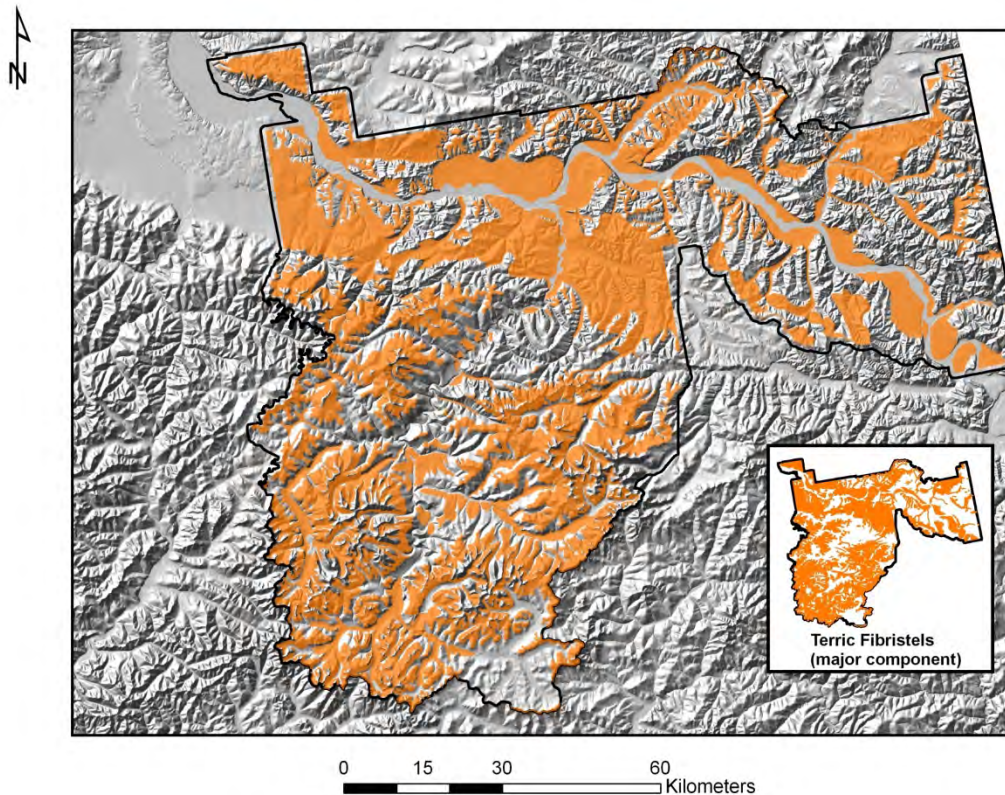
Histic epipedon—zone from surface to a depth of 63 centimeters

Gleyed matrix—zone from 63 to 152 centimeters

Soil temperature regime—cryic

Depth to mineral soil—63 centimeters

Terric Fibristels



Taxonomic Classification

Terric Fibristels

Setting

Depth class: Shallow or moderately deep

Drainage class: Very poorly drained

Landform: Drainageways and depressions of alluvial plains, glacial plains, eolian plains, fan terraces, and stream terraces

Parent material: Organic material over silty alluvium or eolian deposits, organic material over gravelly till or outwash deposits

Elevation: 203 to 1,200 meters

Slope: 0 to 20 percent

Annual precipitation: 234 to 705 millimeters

Annual temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Taxonomic Families

- Loamy, mixed, euic, subgelic Terric Fibristels
- Loamy, mixed, dysic, subgelic Terric Fibristels

Representative Pedon Location

Location in the survey area: Latitude 65°9'16" north, longitude 142°25'45" west

Representative Pedon

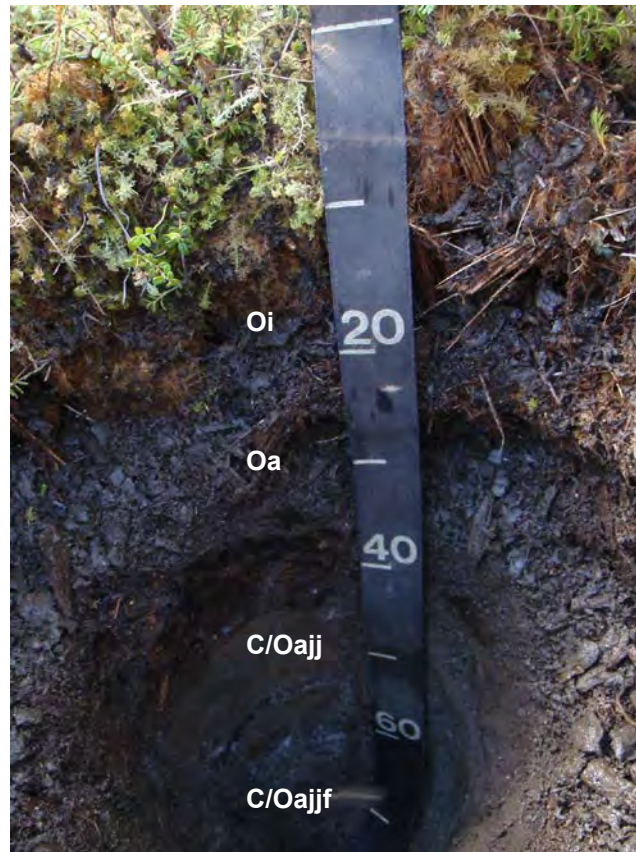
X1—Terric Fibristels, on a fan terrace of an alluvial fan under black spruce and ericaceous shrub. (Colors are for saturated soil; textures are apparent field textures.)

Oi—0 to 29 centimeters; brown (7.5YR 4/4) peat, moist; common coarse, medium, fine, and very fine roots throughout; noneffervescent; strongly acid (pH 5.1); abrupt wavy boundary.

Oa—29 to 43 centimeters; black (10YR 2/1) muck, moist; common medium, fine, and very fine roots throughout; noneffervescent; strongly acid (pH 5.3); 5 percent coarse woody fragments; abrupt wavy boundary.

C/Oajj—43 to 67 centimeters; 80 percent dark gray (2.5Y 4/1) silt loam, moist; 35 percent sand, 61 percent silt, and 4 percent clay; weak thin platy structure; very friable, slightly sticky and nonplastic; common fine roots throughout; noneffervescent; strongly acid (pH 5.1); gradual irregular boundary.

C/Oajjf—67 to 72 centimeters; 90 percent dark gray (2.5Y 4/1) permanently frozen silt loam, moist; 35 percent sand, 61 percent silt, and 4 percent clay; weak thin platy structure; very friable, slightly sticky and nonplastic; noneffervescent; strongly acid (pH 5.2).



Range in Characteristics

Soil moisture class: Aquic

Mean annual soil temperature: -0.2 to -3.0 degrees C

Depth to contrasting textural stratification: 54 to 63 centimeters

Depth to permafrost: 54 to 63 centimeters

Thickness of histic epipedon: 54 to 63 centimeters

Oi horizon:

Color—hue of 5YR to 10YR, value of 2 to 4, chroma of 1 to 4

Rock fragment content—0 to 10 percent total, with 0 to 10 percent cobbles and 0 to 10 percent gravel

Organic matter content—70 to 95 percent

Reaction—extremely acid to slightly acid

A/Cgf horizon:

Color of A part—hue 7.5YR to 2.5Y, value of 2 or 3, chroma of 1 to 3

Color of Cgf part—hue 10YR to 5Y, value of 3 to 5, chroma of 1 or 2

Texture—mucky silt loam, silt loam, very fine sandy loam

Clay content—0 to 10 percent

Silt content—45 to 75 percent

Sand content—15 to 55 percent

Rock fragment content—0 to 10 percent total, with 0 to 10 percent cobbles and 0 to 10 percent gravel

Organic matter content—8 to 14 percent

Reaction—very strongly acid to slightly acid

2Cf and 2Cg horizons (where present):

Color—hue 2.5Y or 5Y, value of 4 or 5, chroma of 1 to 3

Texture—fine sandy loam, loam

Clay content—3 to 10 percent

Silt content—35 to 55 percent

Sand content—35 to 55 percent

Rock fragment content—0 to 20 percent total, with 0 to 10 percent cobbles and 0 to 20 percent gravel

Organic matter content—8 to 14 percent

Reaction—very strongly acid to slightly acid

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Folistic Glacistels in adjacent convex positions
- X1—Folistic Haplorthels on adjacent uplands
- X1—Typic Histoturbels on adjacent uplands

Drainage and Saturated Hydraulic Conductivity

Drainage class: Very poorly drained

Saturated hydraulic conductivity: Very high in the organic layers, very low in the permafrost

Use and Vegetation

Use: Wildlife habitat

Vegetation: Black spruce, mixed ericaceous shrubs, tussocks, Sphagnum moss, lichen

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Minor throughout interior Alaska

Remarks

Diagnostic horizons and features:

Histic epipedon—zone from surface to a depth of 59 centimeters

Gleyed matrix—zone from 59 to 152 centimeters

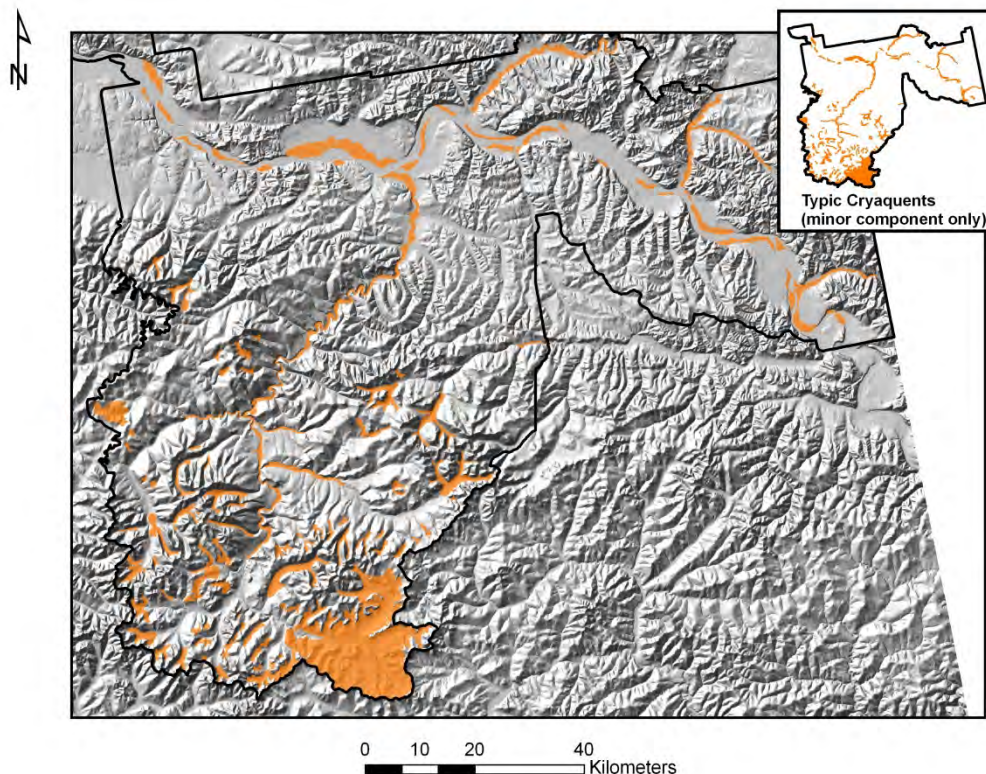
Depth to permafrost—54 to 63 centimeters

Soil temperature regime—gelic

Soil temperature class—subgelic

Depth to mineral soil—59 centimeters

Typic Cryaquents



Taxonomic Classification

Typic Cryaquents

Setting

Depth class: Very deep

Drainage class: Very poorly drained

Landform: Flood plains, drainageways

Parent material: Silty alluvium, stratified sandy to silty alluvium, stratified sandy to silty alluvium over sandy and gravelly alluvium

Elevation: 121 to 366 meters

Slope: 0 to 5 percent

Annual precipitation: 254 to 356 millimeters

Annual temperature: -4 to -2 degrees C

Frost-free period: 80 to 120 days

Taxonomic Families

- Coarse-silty, mixed, superactive, nonacid Typic Cryaquents
- Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid Typic Cryaquents
- Sandy-skeletal, mixed Typic Cryaquents

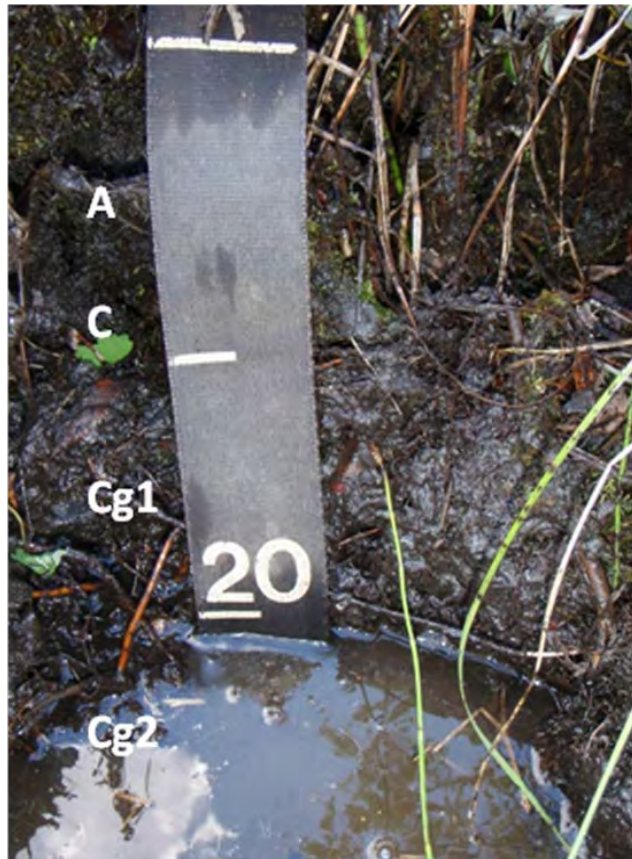
Representative Pedon Location

Location in the survey area: Latitude 64°32'42" north, longitude 143°6'46" west

Representative Pedon

Typic Cryaquents in a drainageway with willow and herbaceous vegetation. (Colors are for moist soil; textures are apparent field textures.)

- A—0 to 6 centimeters; dark grayish brown (10YR 4/2) silt loam; 5 percent clay; nonsticky and nonplastic; common very fine and fine roots; slightly alkaline (pH 7.8); clear smooth boundary.
- C—6 to 10 centimeters; brown (10YR 4/3) coarse sandy loam; 2 percent clay; nonsticky and nonplastic; common very fine and fine roots; moderately alkaline (pH 8.0); abrupt broken boundary.
- Cg1—10 to 21 centimeters; 35 percent dark greenish gray (10Y 3/1) fine sandy loam and 65 percent dark greenish gray (10Y 4/1) very fine sandy loam; 5 percent clay; nonsticky and nonplastic; many very fine and fine roots; slightly alkaline (pH 7.7); clear wavy boundary.
- Cg2—21 to 152 centimeters; black (N 2.5/0) silt loam; 5 percent clay; nonsticky and nonplastic; common very fine and fine roots; slightly alkaline (pH 7.8).



Range in Characteristics

Soil moisture class: Aquic

Mean annual soil temperature: 1 to 2 degrees C

O horizon (where present):

Color—hue of 7.5YR or 10YR, value of 2.5 to 4, chroma of 1 to 4

In lieu texture—slightly decomposed, moderately decomposed, or highly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—strongly acid to neutral

A horizon:

Color—hue of 10YR, 2.5Y, or 5Y, value of 2, 3, or 4, chroma of 1 or 2

Reaction—slightly acid to slightly alkaline

Cg horizon:

Color—hue of 2.5Y, 5Y, or 10Y or neutral, value of 2.5 to 4, chroma of 1 to 3

Texture (less than 2 millimeters)—silt, silt loam, or sand, commonly stratified

Clay content—0 to 10 percent

Reaction—slightly acid to slightly alkaline

2Cg horizon (where present):

Color—variegated

Texture—sand, loamy sand, coarse sand, loamy coarse sand

Rock fragment content—0 to 65 percent gravel and cobbles

Reaction—slightly acid to slightly alkaline

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Histoturbels on adjacent uplands
- X1—Fluvaquentic Aquorthels in steeper drainageways
- X1—Typic Haplocrypts on adjacent upland, south-facing hill slopes and mountain slopes
- X1—Typic Dystrocrypts on adjacent upland, south-facing hill slopes and mountain slopes

Drainage and Saturated Hydraulic Conductivity

Drainage class: Very poorly drained

Saturated hydraulic conductivity: Moderately low to moderately high in the stratified or silty upper mineral layers, high in the underlying sand and gravel (where present)

Use and Vegetation

Use: Wildlife habitat

Vegetation: Boreal riparian scrub and riparian forests

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Moderately extensive throughout the boreal forests and subalpine life zones of interior Alaska

Remarks

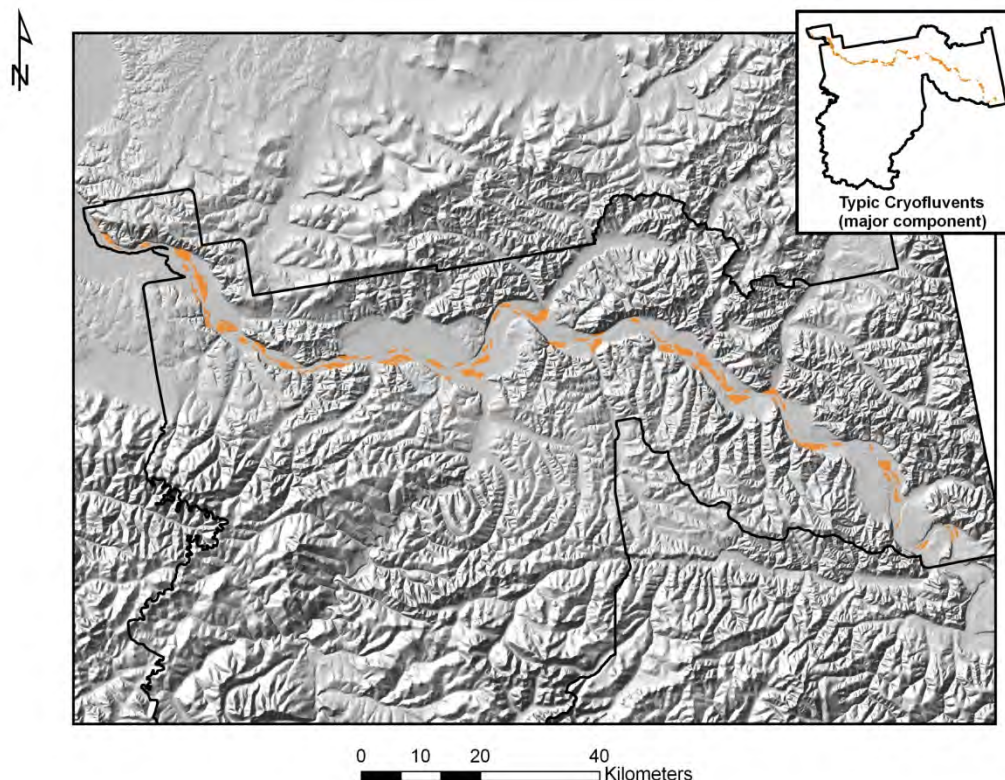
Diagnostic horizons and features:

Aquic conditions—zone from 4 to 152 centimeters

Soil temperature regime—cryic

Note: Irregular decrease in organic carbon throughout, based on stratification of sand, silt, and organic matter.

Typic Cryofluvents



Taxonomic Classification

Typic Cryofluvents

Setting

Depth class: Very deep

Drainage class: Somewhat excessively drained to moderately well drained

Landform: Flood plains

Parent material: Sandy and silty alluvium, sandy and silty alluvium over sandy and gravelly alluvium, gravelly alluvium

Elevation: 190 to 1,812 meters

Slope: 0 to 15 percent

Annual precipitation: 207 to 397 millimeters

Annual temperature: -5 to -3 degrees C

Frost-free period: 75 to 135 days

Taxonomic Families

- Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, nonacid Typic Cryofluvents
- Coarse-loamy, mixed, superactive, nonacid Typic Cryofluvents
- Coarse-loamy, mixed, superactive, calcareous Typic Cryofluvents
- Coarse-silty, mixed, superactive, nonacid Typic Cryofluvents
- Sandy, mixed Typic Cryofluvents
- Sandy-skeletal, mixed Typic Cryofluvents
- Coarse-loamy over sandy or sandy-skeletal, mixed, superactive, calcareous Typic Cryofluvents

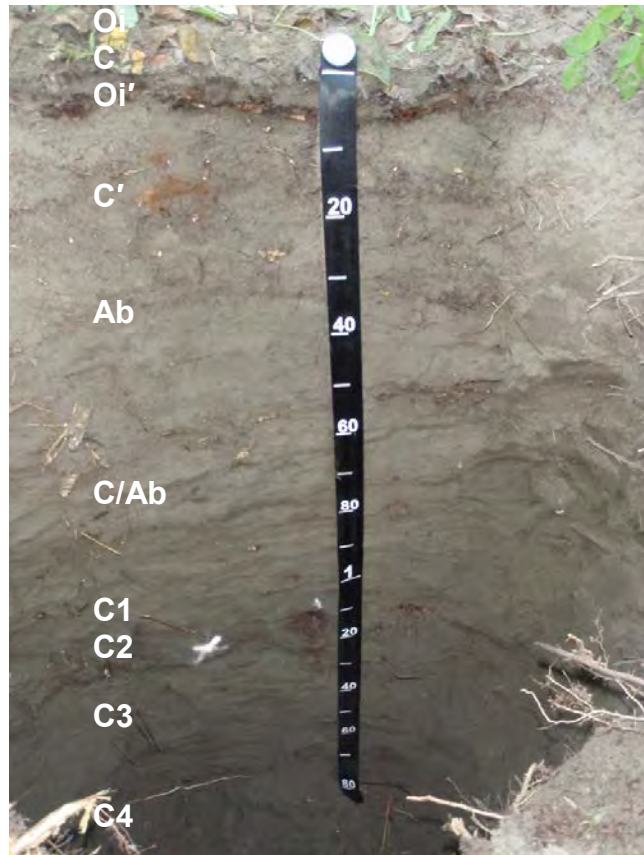
Representative Pedon Location

Location in the survey area: Latitude 65°21'18" north, longitude 143°12'28" west.

Representative Pedon

Typic Cryofluvents on a nearly level slope of a flood plain under balsam poplar forest. (Colors are for moist soil; textures are apparent field textures.)

- Oi—0 to 3 centimeters; very dark grayish brown (10YR 3/2) slightly decomposed plant material; noneffervescent; neutral (pH 7.2; abrupt smooth boundary.
- C—3 to 4 centimeters; dark gray (2.5Y 4/1) very fine sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; massive; very friable, nonsticky and nonplastic; common fine and very fine roots; very slightly effervescent; slightly alkaline (pH 7.5); abrupt smooth boundary.
- Oi'—4 to 6 centimeters; dark brown (10YR 3/3) slightly decomposed plant material; common medium, fine, and very fine roots; noneffervescent; neutral (pH 7.0); abrupt smooth boundary.
- C'—6 to 28 centimeters; very dark gray (2.5Y 3/1) very fine sandy loam; 60 percent sand, 35 percent silt, and 5 percent clay; massive; very friable, nonsticky and nonplastic; many coarse and medium and common very fine and fine roots; slightly effervescent; slightly alkaline (pH 7.6); clear smooth boundary.
- Ab—28 to 33 centimeters; very dark grayish brown (2.5Y 3/2) very fine sandy loam, moist; 60 percent sand, 34 percent silt, and 6 percent clay; weak very fine subangular blocky structure; very friable, nonsticky and nonplastic; common very coarse, many coarse, and common medium, fine, and very fine roots; very slightly effervescent; slightly alkaline (pH 7.8); clear smooth boundary.
- C"—33 to 51 centimeters; dark grayish brown (2.5Y 4/2) very fine sandy loam; 60 percent sand, 35 percent silt, and 5 percent clay; massive; very friable, nonsticky and nonplastic; common very coarse, coarse, medium, fine, and very fine roots; very slightly effervescent; moderately alkaline (pH 8); abrupt smooth boundary.
- C/Ab—51 to 84 centimeters; 90 percent dark grayish brown (2.5Y 4/2) fine sandy loam and 10 percent very dark gray (2.5Y 3/1) very fine sandy loam; 60 percent sand, 35 percent silt, and 5 percent clay; massive; very friable, nonsticky and nonplastic; common very coarse, coarse, medium, fine, and very fine roots; very slightly effervescent; slightly alkaline (pH 7.7); abrupt smooth boundary.
- C1—84 to 127 centimeters; dark gray (5Y 4/1) very fine sandy loam; 55 percent sand, 39 percent silt, and 6 percent clay; massive; friable, nonsticky and nonplastic; common coarse, medium, fine, and very fine roots; 1 percent well rounded 5- to 75-millimeter mixed rock fragments; slightly effervescent; moderately alkaline (pH 8.1); abrupt smooth boundary.
- C2—127 to 132 centimeters; very dark gray (5Y 3/1) sandy loam; 70 percent sand, 27 percent silt, and 3 percent clay; massive; very friable, nonsticky and nonplastic; common coarse, medium, fine, and very fine roots; very slightly effervescent; moderately alkaline (pH 8.1); abrupt smooth boundary.
- C3—132 to 152 centimeters; 82 percent dark olive gray (5Y 3/2) and 15 percent light olive gray (5Y 6/2), stratified fine sandy loam; 70 percent sand, 26 percent silt, 4 percent clay; massive; friable, nonsticky and nonplastic; common coarse, medium, fine, and very fine roots; 3 percent (common) fine olive yellow (2.5Y 6/8) masses of oxidized iron sharp; 2 percent well rounded 5- to 75-millimeter mixed rock fragments and 3 percent well rounded 2- to 5-millimeter mixed rock fragments; very slightly effervescent; moderately alkaline (pH 8.2); abrupt smooth boundary.



Range in Characteristics

Soil moisture class: Udic

Mean annual soil temperature: -0.2 to 1.0 degree C

Depth to contrasting textural stratification: 0 to 152 centimeters or more

Thickness of ochric epipedon: 0 to 3 centimeters

O horizon and O part of O/A and C/O horizons (where present):

Color—hue of 2.5YR to 10YR, value of 2 to 3, chroma of 1 to 4

Texture—moderately decomposed or slightly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—extremely acid to neutral

AC and A horizons and A part of O/A horizon (where present):

Color—hue of 7.5YR to 2.5Y, value of 2 to 5, chroma of 1 to 4

Texture—stratified sand to silt, silt loam, stratified fine sand to silt

Clay content—0 to 10 percent

Silt content—10 to 75 percent

Sand content—15 to 85 percent

Organic matter content—2 to 6 percent

Rock fragment content—0 to 5 percent rounded, indurated gravel

Electrical conductivity (millimhos per centimeter)—0 to 0.5

Reaction—extremely acid to slightly alkaline

C horizon and C part of C/O horizon (where present):

Color—hue of 7.5YR to 5Y, value of 2.5 to 7, chroma of 1 to 6

Texture—stratified sand to silt, stratified fine sand to silt

Clay content—0 to 10 percent

Silt content—10 to 35 percent
Sand content—60 to 85 percent
Organic matter content—1 to 4 percent
Rock fragment content—0 to 5 percent rounded, indurated gravel
Calcium carbonate equivalent—0 to 5 percent
Electrical conductivity (millimhos per centimeter)—0 to 2
Reaction—very strongly acid to moderately alkaline

2C horizon (where present):

Color—hue of 10YR to 5Y, value of 2.5 to 7, chroma of 1 to 6
Texture—very cobbly loamy coarse sand, extremely gravelly coarse sand, extremely cobbly sand, extremely gravelly loamy coarse sand, extremely cobbly sand, very cobbly sand, very cobbly loamy coarse sand
Clay content—0 to 5 percent
Silt content—0 to 15 percent
Sand content—75 to 95 percent
Rock fragment content—20 to 65 percent rounded, indurated gravel; 0 to 45 percent rounded, indurated cobbles
Calcium carbonate equivalent—0 to 5 percent
Electrical conductivity (millimhos per centimeter)—0 to 2
Reaction—strongly acid to moderately alkaline

Geographically Associated Soils in the Interior Alaska Resource Region (X1)

- X1—Typic Cryorthents on lower flood plains
- X1—Oxyaquic Cryorthents on lower flood plains
- X1—Terric Cryofibrists in depressions of flood plains
- X1—Fluventic Haplorthels on higher flood plains

Drainage and Saturated Hydraulic Conductivity

Drainage class: Somewhat excessively drained to moderately well drained

Saturated hydraulic conductivity: Very high in the organic layers (where present), moderately high to very high in the stratified sandy and silty layers, very high in the sandy and gravelly substratum (where present)

Use and Vegetation

Use: Wildlife habitat

Native vegetation: Mixed alder and willow shrub and white spruce and balsam poplar forests

Distribution and Extent

Distribution: Throughout major land resource region X1

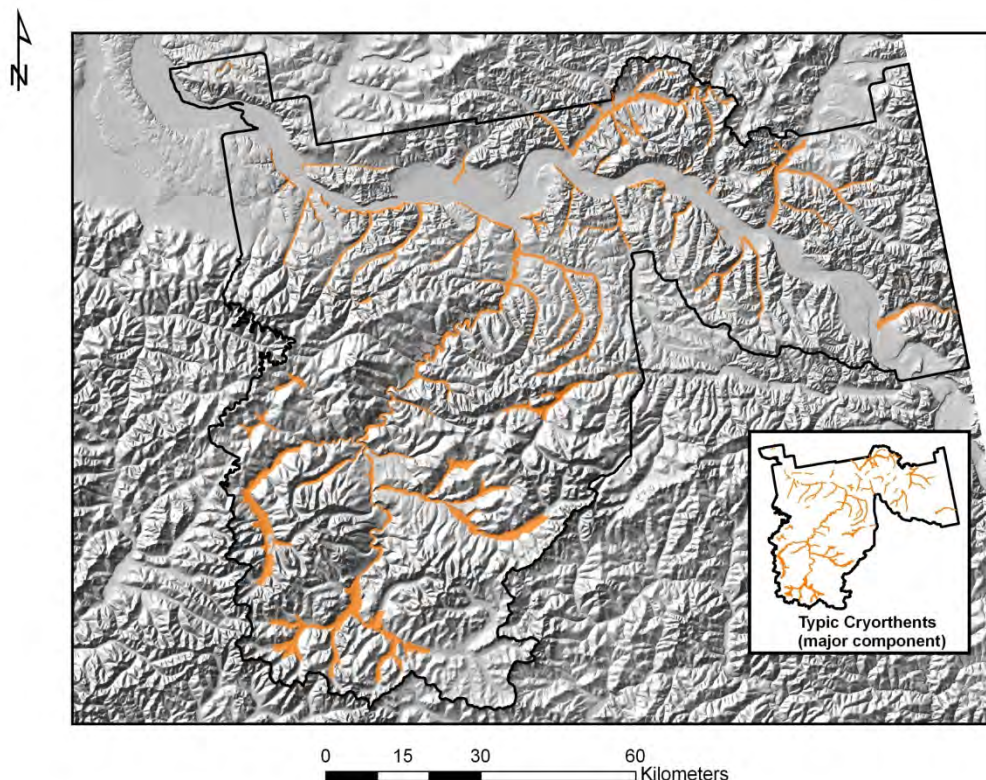
Extent: Extensive throughout interior Alaska

Remarks

Diagnostic horizons and features:

Ochric epipedon—zone from 5 to 25 centimeters
Assumed irregular decrease in organic carbon (based on stratification and buried organic horizons)—5 to 92 centimeters
Soil temperature regime—cryic

Typic Cryorthents



Taxonomic Classification

Typic Cryorthents

Setting

Depth class: Shallow to very deep

Drainage class: Excessively drained to well drained

Landform: Flood plains, mountains, escarpments

Parent material: Sandy and silty alluvium, sandy and silty alluvium over sandy and gravelly alluvium, gravelly alluvium, gravelly colluvium

Elevation: 50 to 1,320 meters

Slope: 0 to 80 percent

Annual precipitation: 207 to 967 millimeters

Annual temperature: -15 to 2.5 degrees C

Frost-free period: 60 to 135 days

Taxonomic Families

- Sandy-skeletal, mixed Typic Cryorthents
- Fragmental, mixed, superactive, nonacid Typic Cryorthents
- Loamy-skeletal, mixed, superactive, nonacid Typic Cryorthents
- Coarse-loamy, mixed, superactive, nonacid Typic Cryorthents
- Loamy-skeletal, mixed, superactive, calcareous Typic Cryorthents

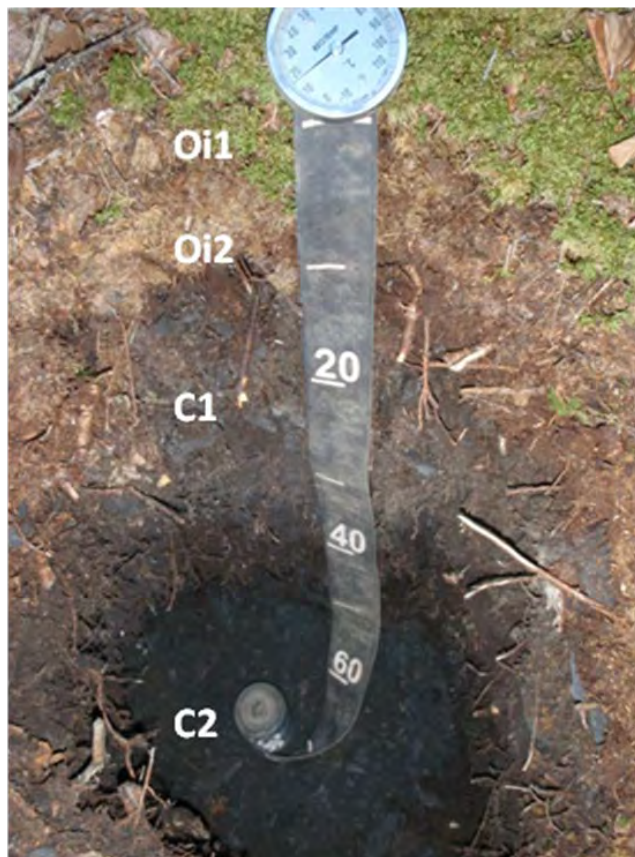
Representative Pedon Location

Location in the survey area: Latitude 65°20'57" north, longitude 143°5'57" west.

Representative Pedon

Typic Cryorthents on an escarpment with an 84-percent slope under mixed willow, alder, and balsam poplar shrub. (Colors are for moist soil; textures are apparent field textures.)

- Oi1—0 to 9 centimeters; dark brown (10YR 3/3) slightly decomposed plant material; strongly acid (pH 5.5); clear smooth boundary.
- Oi2—9 to 16 centimeters; very dark brown (10YR 2/2) slightly decomposed plant material; very strongly acid (pH 4.5); abrupt smooth boundary.
- C1—16 to 31 centimeters; black (2.5Y 2.5/1) extremely cobbly coarse sandy loam; 60 percent sand, 38 percent silt, and 2 percent clay; massive; very friable; common coarse and medium, many fine, and common very fine roots; 20 percent rounded 5- to 75-millimeter unspecified fragments and 65 percent flat 2- to 150-millimeter unspecified fragments; noneffervescent; slightly acid (pH 6.3); gradual irregular boundary.
- C2—31 to 152 centimeters; black (5Y 2.5/1) extremely cobbly coarse sandy loam; 65 percent sand, 26 percent silt, and 9 percent clay; massive; friable; common coarse, medium, fine, and very fine roots; 15 percent rounded 5- to 75-millimeter unspecified fragments and 55 percent flat 2- to 150-millimeter unspecified fragments; noneffervescent; slightly acid (pH 6.3).



Range in Characteristics

Soil moisture class: Udic

Mean annual soil temperature: -0.2 to 1.0 degrees C

Depth to contrasting textural stratification: 2 to 152 centimeters or more

Depth to paralithic bedrock: 25 to 152 centimeters or more

Depth to lithic bedrock: 50 to 152 centimeters or more

Thickness of ochric epipedon: 0 to 31 centimeters

O horizon and O part of O/A and C/O horizons (where present):

Color—hue of 2.5YR to 10YR, value of 2 or 3, chroma of 1 to 4

Texture—moderately decomposed or slightly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—extremely acid to neutral

AC and A horizons and A part of O/A horizon (where present):

Color—hue of 7.5YR to 2.5Y, value of 2 to 6, chroma of 1 to 4

Texture—stratified sand to silt, silt loam, loam

Clay content—0 to 10 percent

Silt content—10 to 75 percent

Sand content—15 to 85 percent

Organic matter content—2 to 6 percent

Rock fragment content—0 to 5 percent rounded, indurated gravel

Electrical conductivity (millimhos per centimeter)—0 to 0.5

Reaction—extremely acid to slightly alkaline

C horizon, and C part of C/O horizon (where present):

Color—hue of 7.5YR to 5Y, value of 2.5 to 7, chroma of 1 to 6

Texture—stratified sand to silt, stratified fine sand to silt

Clay content—0 to 10 percent

Silt content—10 to 35 percent

Sand content—60 to 85 percent

Organic matter content—1 to 4 percent

Rock fragment content—0 to 5 percent rounded, indurated gravel

Calcium carbonate equivalent—0 to 10 percent

Electrical conductivity (millimhos per centimeter)—0 to 2

Reaction—very strongly acid to moderately alkaline

2C horizon (where present):

Color—hue of 10YR to 5Y, value of 2.5 to 7, chroma of 1 to 6

Texture—very cobbly loamy coarse sand, extremely gravelly coarse sand, extremely cobbly sand, extremely gravelly loamy coarse sand, extremely cobbly sand, very cobbly sand, very cobbly loamy coarse sand, silty clay, clay

Clay content—0 to 65 percent

Silt content—0 to 40 percent

Sand content—25 to 95 percent

Rock fragment content—0 to 65 percent rounded, indurated gravel; 0 to 45 percent rounded, indurated cobbles

Calcium carbonate equivalent—0 to 12 percent

Electrical conductivity (millimhos per centimeter)—0 to 2

Reaction—strongly acid to moderately alkaline

Geographically Associated Soils in the Interior Alaska Resource Region (X1)

- X1—Typic Cryofluvents on flood plains
- X1—Oxyaquic Cryorthents on flood plains
- X1—Terric Cryofibrists in depressions of flood plains
- Rock outcrop and Rubble land on steep mountains

Drainage and Saturated Hydraulic Conductivity

Drainage class: Excessively drained to well drained

Saturated hydraulic conductivity: Very high in the organic layers (where present), moderately high to very high in the loamy surface layer (where present), high to very high in the gravelly substratum

Use and Vegetation

Use: Wildlife habitat

Native vegetation: Mixed alder and willow shrub and white spruce and balsam poplar forests on flood plains, alder and sparse vegetation on slopes of escarpments and steep mountains

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Extensive throughout interior Alaska

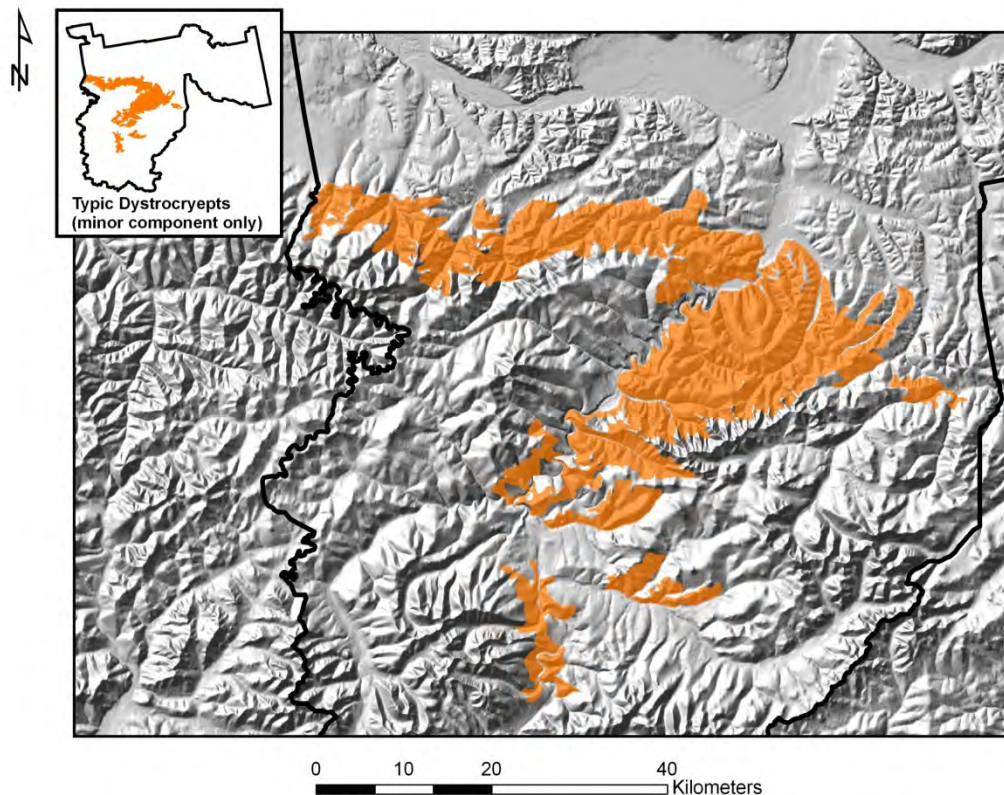
Remarks

Diagnostic horizons and features:

Diagnostic horizons—none

Soil temperature regime—cryic

Typic Dystrocryepts



Taxonomic Classification

Typic Dystrocryepts

Setting

Depth class: Very shallow to very deep

Drainage class: Well drained

Landform: Hills, mountains

Parent material: Colluvium, loess over colluvium and/or residuum, loess over residuum derived from schist or granite

Elevation: 152 to 890 meters

Slope: 3 to 70 percent

Aspect: Slopes of less than 15 percent—non-influencing, slopes of more than 15 percent—southeast, south, southwest

Annual precipitation: 254 to 486 millimeters

Annual temperature: -7 to 2 degrees C

Frost-free period: 75 to 120 days

Taxonomic Families

- Loamy-skeletal, mixed, superactive, shallow Typic Dystrocryepts
- Coarse-loamy, mixed, superactive Typic Dystrocryepts

Representative Pedon Location

Location in the survey area: Latitude 65°13'20" north, longitude 142°53'23" west

Representative Pedon

X1—Typic Dystrocryepts on a nearly level slope of a high flood plain with white spruce forest. (Colors are for moist soil; textures are apparent field textures.)

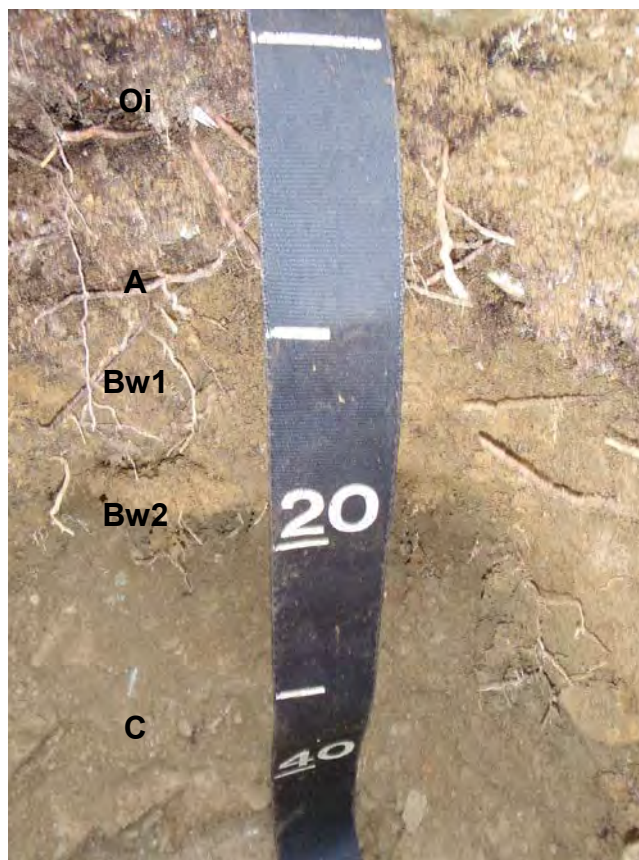
Oi—0 to 4 centimeters; very dark grayish brown (10YR 3/2) slightly decomposed plant material; common medium, very fine, and fine roots; extremely acid (pH 4.3); clear smooth boundary.

A—4 to 6 centimeters; very dark brown (10YR 2/2) gravelly silt loam; 3 percent clay; weak very fine granular structure; very friable, nonsticky and nonplastic; common medium, coarse, very fine, and fine roots; 10 percent fine gravel; extremely acid (pH 4.4); clear smooth boundary.

Bw1—6 to 16 centimeters; yellowish brown (10YR 5/6) very gravelly sandy loam; 2 percent clay; weak very fine angular blocky structure; very friable, nonsticky and nonplastic; common medium, very fine, and fine roots; 30 percent fine gravel; very strongly acid (pH 4.6); gradual smooth boundary.

Bw2—16 to 23 centimeters; light olive brown (2.5Y 5/6) very gravelly sandy loam; 2 percent clay; weak very fine granular structure; very friable, nonsticky and nonplastic; common very fine and fine roots; 30 percent fine gravel; strongly acid (pH 5.2); gradual smooth boundary.

C—23 to 152 centimeters; light yellowish brown (2.5Y 6/4) extremely gravelly sandy loam; 2 percent clay; massive; friable, nonsticky and nonplastic; common fine roots; 40 percent fine gravel; strongly acid (pH 5.1).



Range in Characteristics

Soil moisture class: Udic

Soil temperature regime: Cryic

Depth to lithic bedrock: 50 to 152 centimeters or more

Depth to paralithic bedrock: 22 to 152 centimeters or more

O horizon:

Color—hue of 2.5YR to 10YR, value of 2 to 3, chroma of 1 to 4

Texture—moderately decomposed plant material or slightly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—ultra acid to very strongly acid

A horizon, and AE horizon (where present):

Color—hue of 7.5YR or 10YR, value of 2 to 4, chroma of 1 to 3

Texture—silt loam, very fine sandy loam

Clay content—3 to 14 percent

Organic matter content—2 to 4 percent

Reaction—extremely acid to very strongly acid

Bw horizon, and 2Bw horizon (where present):

Color—hue of 7.5YR to 2.5Y, value of 3 to 5, chroma of 3 to 6

Texture—silt loam, silt, sandy loam, very fine sandy loam

Clay content—3 to 14 percent

Rock fragment content—0 to 60 percent gravel, cobbles, channers, and flagstones

Reaction—strongly acid or moderately acid

BC and 2BC horizons (where present):

Texture (less than 2 millimeters)—silt loam, loam, sandy loam

Clay content—1 to 14 percent

Rock fragment content—0 to 75 percent gravel, cobbles, channers, and flagstones

Reaction—strongly acid or moderately acid

C horizon, and 2C horizon (where present):

Color—hue of 7.5YR to 2.5Y, value of 3 to 6, chroma of 3 or 4

Texture—loam, very fine sandy loam, silt loam, sandy loam, coarse sandy loam

Clay content—2 to 15 percent

Rock fragment content—35 to 85 percent gravel, cobbles, channers, and flagstones

Reaction—strongly acid to slightly acid

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Histoturbels on more gently sloping footslopes and toeslopes
- X1—Folistic Haplorthels on steep, north aspects

Drainage and Saturated Hydraulic Conductivity

Drainage class: Well drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately slow in the mineral layers

Use and Vegetation

Use: Wildlife habitat, source of forest products

Vegetation: Subalpine spruce, dwarf birch, mixed dwarf shrub woodland

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Moderate throughout interior Alaska in areas underlain by schist, granite, and other acid bedrock

Remarks

Diagnostic horizons and features:

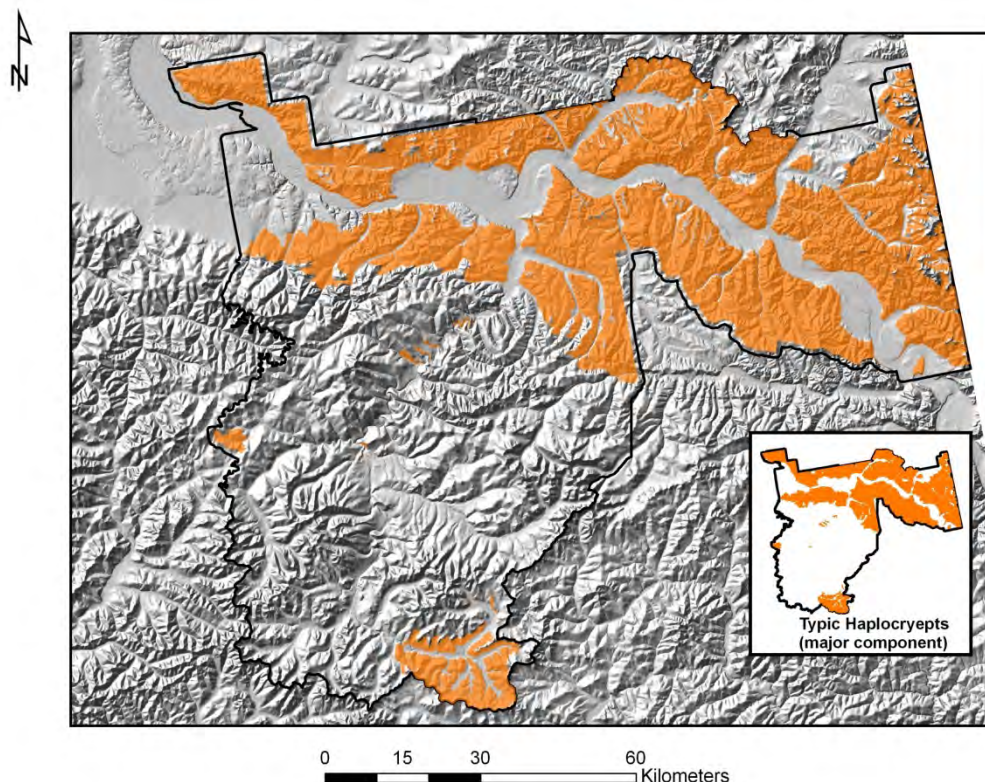
Ochric epipedon—zone from 4 to 6 centimeters

Cambic horizon—zone from 6 to 23 centimeters

Soil temperature regime—cryic

Soil moisture regime—udic

Typic Haplocryepts



Taxonomic Classification

Typic Haplocryepts

Setting

Depth class: Moderately deep to very deep

Drainage class: Well drained to somewhat excessively drained

Landform: Hills, mountains

Parent material: Gravelly colluvium, silty eolian deposits over gravelly colluvium

Elevation: 240 to 1,275 meters

Slope: 1 to 85 percent

Annual precipitation: 245 to 688 millimeters

Annual temperature: -7 to -2 degrees C

Frost-free period: 20 to 110 days

Taxonomic Families

- Loamy-skeletal, mixed, superactive Typic Haplocryepts
- Fragmental, mixed Typic Haplocryepts

Representative Pedon Location

Location in the survey area: Latitude 65°36'29" north, longitude 143°44'29" west

Representative Pedon

Typic Haplocryepts on a backslope of a hill with a slope of 14 percent and under white spruce forest. (Colors are for moist soil; textures are apparent field textures.)

Oi—0 to 8 centimeters; slightly decomposed plant material.

A—8 to 15 centimeters; very dark gray (10YR 3/1) silt loam; 28 percent sand, 69 percent silt, and 3 percent clay; 1 percent nonflat 75- to 250-millimeter schist fragments, 2 percent flat 2- to 150-millimeter schist fragments, and 10 percent nonflat 2- to 75-millimeter schist fragments; strongly acid (pH 5.2).

2Bw—15 to 31 centimeters; dark grayish brown (10YR 4/2) gravelly silt loam; 30 percent sand, 66 percent silt, and 4 percent clay; moderate medium subangular blocky structure; 2 percent flat 2- to 50-millimeter schist fragments, 3 percent nonflat 75- to 250-millimeter schist fragments, and 15 percent nonflat 2- to 75-millimeter schist fragments; strongly acid (pH 5.4).

2C1—31 to 63 centimeters; 95 percent grayish brown (10YR 5/2) gravelly very fine sandy loam; 65 percent sand, 30 percent silt, and 5 percent clay; 5 percent fine masses of oxidized iron; 16 percent nonflat 2- to 75-millimeter schist fragments; slightly acid (pH 6.1).

2C2—63 to 152 centimeters; dark grayish brown (10YR 4/2) very gravelly very fine sandy loam; 72 percent sand, 20 percent silt, and 8 percent clay; 4 percent flat 2- to 150-millimeter schist fragments and 48 percent nonflat 2- to 75-millimeter schist fragments; slightly acid, (pH 6.5).



Range in Characteristics

Soil moisture class: Udic

Mean annual soil temperature: 1 to 2 degrees C

Depth to bedrock: 50 to more than 152 centimeters

Thickness of ochric epipedon: 2 to 9 centimeters

Thickness of cambic horizon: 5 to 58 centimeters

Oi horizon:

Color—hue of 5YR to 10YR, value of 2 or 3, chroma of 1 to 4

Texture—slightly decomposed plant material, moderately decomposed plant material

Organic matter content—60 to 90 percent

Reaction—extremely acid to moderately acid

A horizon:

Color—hue of 7.5YR to 2.5Y, value of 2 to 5, chroma of 1 to 3

Texture—silt loam, loam, silt, sandy loam

Textural modifiers (where present): Gravelly, very gravelly, extremely gravelly, cobbly, very cobbly, extremely cobbly

Clay content—2 to 15 percent

Silt content—30 to 75 percent

Sand content—25 to 50 percent

Organic matter content—4 to 12 percent

Rock fragment content—0 to 60 percent gravel, 0 to 25 percent cobbles, 0 to 5 percent boulders

Reaction—ultra acid to very strongly acid

2Bw horizon, and Bw horizon (where present):

Color—hue of 7.5YR to 2.5Y, value of 3 to 5, chroma of 3 or 4

Texture—silt loam, sandy loam, loam

Textural modifiers—gravelly, very gravelly, extremely gravelly, cobbly, very cobbly, extremely cobbly

Clay content—0 to 15 percent

Silt content—20 to 60 percent

Sand content—35 to 80 percent

Organic matter content—1 to 4 percent

Rock fragment content—0 to 35 percent cobbles, 0 to 60 percent gravel, 0 to 60 percent channers, 0 to 25 percent stones, 0 to 15 percent flagstones

Reaction—extremely acid to strongly acid

C and Ck horizons (where present) and 2C horizon:

Color—hue of 10YR to 5Y, value of 2 to 5, chroma of 1 to 4

Texture—silt loam, sandy loam, coarse sandy loam, loam, loamy very fine sand

Clay content—0 to 15 percent

Silt content—20 to 60 percent

Sand content—35 to 80 percent

Rock fragment content—0 to 35 percent cobbles, 0 to 60 percent gravel, 0 to 30 percent flagstones, 0 to 60 percent channers, 0 to 25 percent stones

Reaction—very strongly acid to moderately alkaline

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Historthels on hills
- X1—Typic Histoturbels on hills, plains, and terraces
- X1—Folistic Haplorthels on steep, north aspects of mountains and hills

Drainage and Saturated Hydraulic Conductivity

Drainage class: Well drained

Saturated hydraulic conductivity: Very high in the organic mat, moderately high or high in the mineral soil layers

Use and Vegetation

Use: Wildlife habitat, agriculture, forestry, urban development

Vegetation: Native late succession—primarily spruce forest; wildfire and post-fire succession—variety of herbaceous, scrub, and hardwood communities

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Extensive throughout interior Alaska

Remarks

Diagnostic horizons and features:

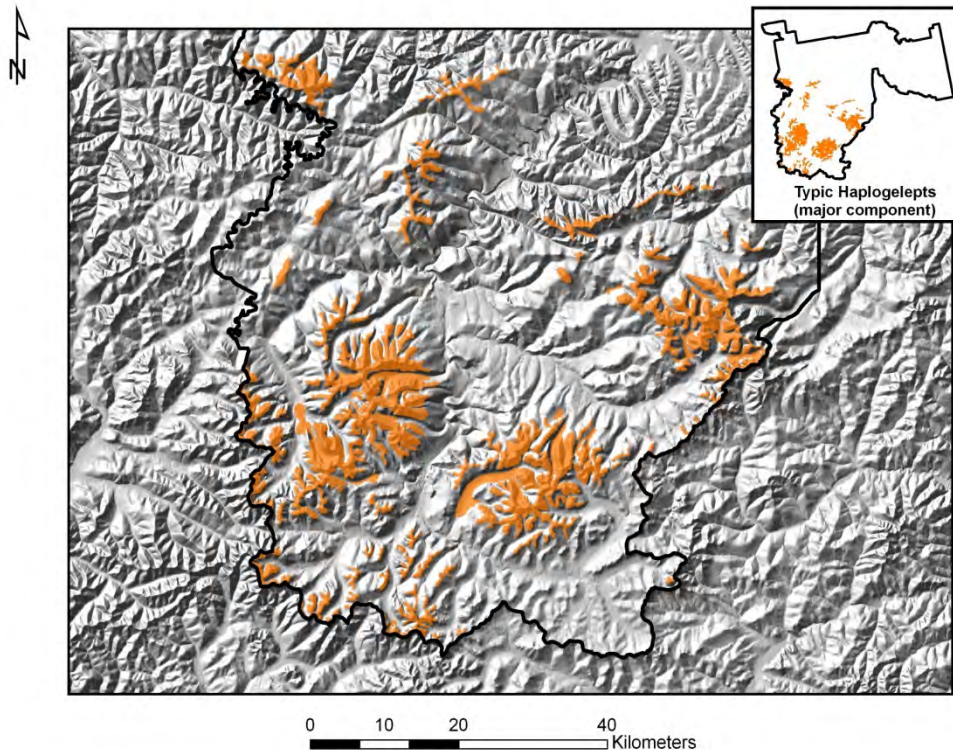
Ochric epipedon—zone from 8 to 15 centimeters

Cambic horizon—zone from 15 to 31 centimeters

Soil temperature regime—cryic

Soil moisture regime—udic

Typic Haplogelepts



Taxonomic Classification

Typic Haplogelepts

Setting

Depth class: Shallow to very deep

Drainage class: Well drained or somewhat excessively drained

Landform: Mountains

Parent material: Gravelly cryoturbate, organic material over gravelly cryoturbate, gravelly colluvium derived from acid igneous rock

Elevation: 1,000 to 2,300 meters

Slope: 1 to 70 percent

Annual precipitation: 372 to 824 millimeters

Annual temperature: -7 to -2 degrees C

Frost-free period: 30 to 70 days

Taxonomic Families

- Loamy-skeletal, mixed, superactive, acid, subgelic Typic Haploglepts
- Loamy-skeletal, mixed, superactive, nonacid, subgelic Typic Haploglepts

Representative Pedon Location

Location in the survey area: Latitude 64°43'43" north, longitude 142°53'41" west

Representative Pedon

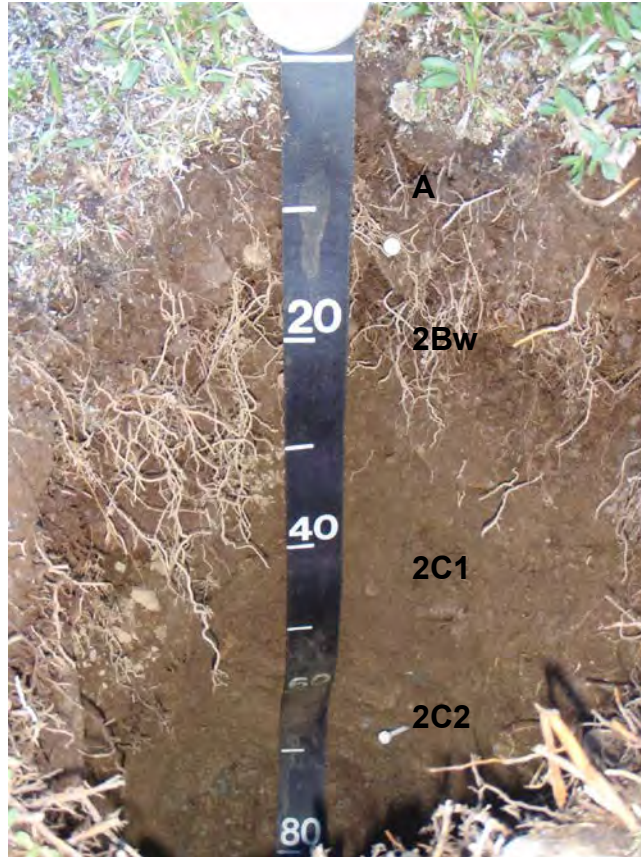
Typic Haploglepts on the backslope of a glaciated hill with a 16-percent slope and alpine scrub vegetation

Oi—0 to 3 centimeters; dark brown (10YR 3/3) slightly decomposed plant material; common medium, very fine, and fine roots throughout; noneffervescent; very strongly acid (pH 4.8); clear smooth boundary.

A—3 to 12 centimeters; very dark gray (10YR 3/1) silt loam; 5 percent clay; weak fine granular structure; very friable, slightly sticky and nonplastic; common medium, very fine, and fine roots throughout; 9 percent fine gravel; noneffervescent; very strongly acid (pH 5.0); clear smooth boundary.

2Bw—12 to 30 centimeters; brown (10YR 4/3) very cobbly silt loam; 5 percent clay; moderate fine subangular blocky structure; friable, slightly sticky and nonplastic; common medium, very fine, and fine roots throughout; 10 percent fine gravel and 15 percent cobbles; noneffervescent; moderately acid (pH 5.8); gradual wavy boundary.

2C—30 to 152 centimeters; dark grayish brown (2.5Y 4/2) very gravelly silt loam; 5 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; common very fine and fine roots throughout; 15 percent fine gravel and 15 percent cobbles; noneffervescent; moderately acid (pH 5.6).



Range in Characteristics

Soil moisture class: Udic

Mean annual soil temperature: -0.2 to -3 degrees C

Thickness of ochric epipedon: 1 to 15 centimeters

Thickness of cambic horizon: 10 to 67 centimeters

Oi horizon:

Texture—slightly decomposed plant material, moderately decomposed plant material

Organic matter content—60 to 90 percent

Rock fragment content—0 to 2 percent cobbles, channers, flagstones, and gravel

Reaction—extremely acid to moderately acid

A horizon:

Color—hue of 10R to 10YR, value of 2 to 4, chroma of 1 to 4

Texture—silt loam, highly organic silt loam, loam

Clay content—2 to 15 percent

Organic matter content—4 to 12 percent

Rock fragment content—5 to 35 percent gravel, cobbles, channers, flagstones, and stones

Reaction—extremely acid to slightly acid

2Bw horizon, and Bw horizon (where present):

Color—hue of 7.5YR to 2.5Y, value of 3 to 5, chroma of 3 to 6

Texture—coarse sandy loam, sandy loam, silt loam, loam

Clay content—2 to 15 percent

Organic matter content—0 to 6 percent

Rock fragment content—15 to 65 percent gravel, cobbles, channers, flagstones, and stones

Reaction—extremely acid to slightly acid

2C horizon, and C horizon (where present):

Color—hue of 10YR to 5Y, value of 2.5 to 6, chroma of 1 to 8

Texture—silt loam, sandy loam, coarse sandy loam, fine sandy loam

Clay content—2 to 15 percent

Rock fragment content—35 to 80 percent gravel, cobbles, channers, flagstones, and stones

Calcium carbonate equivalent—0 to 1 percent

Electrical conductivity (millimhos per centimeter)—0 to 0.5

Reaction—very strongly acid to moderately alkaline

Geographically Associated Soils in the Interior Alaska Resource Region (X1)

- X1—Terric Cryofibrists in depressions
- X1—Typic Historthels on broad summits and toeslopes of hills and mountains
- X1—Typic Histoturbels on broad summits and toeslopes of hills and mountains

Drainage and Saturated Hydraulic Conductivity

Drainage class: Well drained or somewhat excessively drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately high to very high in the mineral soil layers

Use and Vegetation

Use: Wildlife habitat

Native vegetation: Alpine dwarf or medium scrub communities, commonly with a high percentage of lichen

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Extensive throughout the alpine life zones in interior Alaska

Remarks

Diagnostic horizons and features:

Ochric epipedon—zone from 3 to 12 centimeters

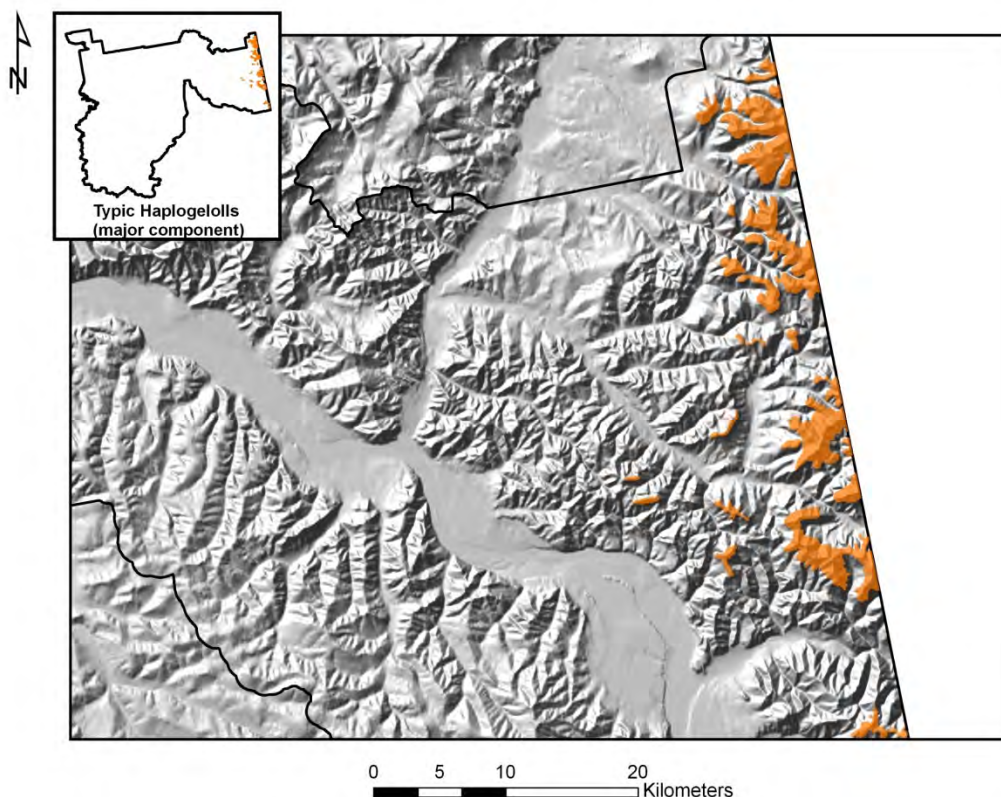
Cambic horizon—zone from 12 to 30 centimeters

Moisture regime—udic

Temperature regime—gelic

Temperature class—subgelic

Typic Haplogelolls



Taxonomic Classification

Typic Haplogelolls

Setting

Depth class: Very deep

Drainage class: Well drained

Landform: Mountains

Microfeatures (where present): Nonsorted circles, solifluction lobes, stripes

Parent material: Loess over gravelly cryoturbate derived from limestone

Elevation: 2,950 to 4,920 meters

Slope: 25 to 70 percent

Annual precipitation: 384 to 519 millimeters

Annual temperature: -6 to -4 degrees C

Frost-free period: 50 to 80 days

Taxonomic Family

- Loamy-skeletal, mixed, superactive, subgelic Typic Haplogelolls

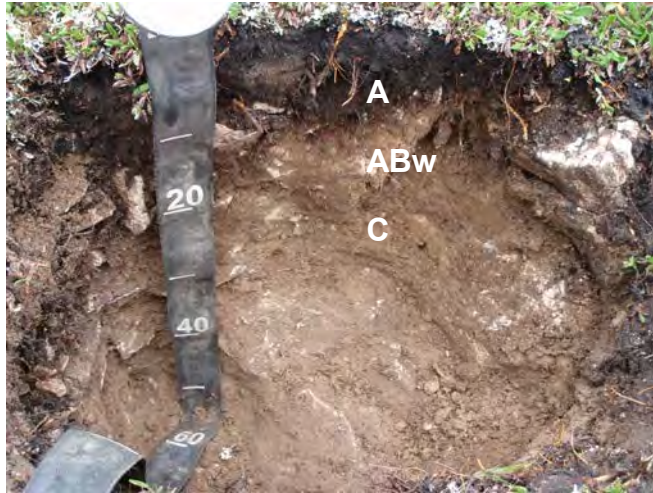
Representative Pedon Location

Location in the survey area: Latitude 65°22'6" north, longitude 141°4'1" west

Representative Pedon

Typic Haplogelolls on a 26-percent mountain backslope under alpine dwarf shrub vegetation. (Colors are for moist soil; textures are apparent field textures.)

- A—0 to 10 centimeters; black (10YR 2/1) silt loam; 2 percent clay; fine single grain structure; very friable; common medium and many very fine and fine roots; 2 percent cobbles; noneffervescent; slightly acid (pH 6.5); clear irregular boundary.
- ABw—10 to 21 centimeters; dark brown (10YR 3/3) cobbly fine sandy loam; 6 percent clay; moderate fine angular blocky structure; friable; many very fine and common fine roots; 3 percent fine gravel and 17 percent cobbles; noneffervescent; neutral (pH 7.1); clear broken boundary.
- C—21 to 152 centimeters; dark yellowish brown (10YR 4/4) very stony fine sandy loam; 5 percent clay; massive; very friable; common fine roots; 14 percent cobbles and 23 percent stones; noneffervescent; slightly alkaline (pH 7.5).



Range in Characteristics

Soil moisture class: Udic

Mean annual soil temperature: -2 to -0.2 degrees C

Depth to contrasting textural stratification: 0 to 20 centimeters

Depth to paralithic bedrock: 53 to 152 centimeters

Thickness of mollic epipedon: 20 to 50 centimeters

O horizon (where present):

Color—hue of 2.5YR to 10YR, value of 2 to 5, chroma of 1 to 4

Texture—slightly decomposed and moderately decomposed plant material

Organic matter content—60 to 90 percent

Rock fragment content—0 to 2 percent gravel, channers, and flagstones

Reaction—extremely acid to slightly alkaline

A horizon:

Color—hue of 7.5YR or 10YR, value of 2 or 3, chroma of 1 or 2

Texture—silt, silt loam, loam

Textural modifiers (where present)—very channery, extremely channery, extremely flaggy

Clay content—5 to 10 percent

Silt content—50 to 70 percent

Sand content—20 to 40 percent

Organic matter content—6 to 12 percent

Rock fragment content—2 to 20 percent channers and flagstones

Calcium carbonate equivalent—0 to 1 percent

Electrical conductivity (millimhos per centimeter)—0 to 0.1

Reaction—moderately acid to moderately alkaline

ABw horizon, and 2A horizon (where present):

Color—hue of 10YR to 5Y, value of 2 to 3, chroma of 1 to 3
Texture—loam, silt loam
Textural modifiers—very channery, extremely channery, extremely flaggy
Clay content—5 to 15 percent
Organic matter content—4 to 8 percent
Rock fragment content—20 to 50 percent channers and flagstones
Calcium carbonate equivalent—0 to 2 percent
Electrical conductivity (millimhos per centimeter)—0 to 0.5
Reaction—moderately acid to moderately alkaline

C horizon, and 2C horizon (where present):

Color—hue of 10YR to neutral, value of 2.5 or 3, chroma of 1 or 2
Texture—loam, silt loam
Textural modifiers—very channery, extremely channery, extremely flaggy
Clay content—10 to 15 percent
Silt content—35 to 50 percent
Sand content—35 to 50 percent
Rock fragment content—30 to 80 percent channers, flagstones, and stones
Calcium carbonate equivalent—0 to 10 percent
Electrical conductivity (millimhos per centimeter)—0 to 0.5
Reaction—moderately acid to moderately alkaline

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Oxyaquic Haplogelolls in swales of mountains

Drainage and Saturated Hydraulic Conductivity

Drainage class: Well drained

Saturated hydraulic conductivity: Very high in the organic layers (where present),
moderately high to very high in the mineral soil layers

Use and Vegetation

Use: Wildlife habitat

Native vegetation: Alpine dwarf scrub communities

Distribution and Extent

Distribution: Throughout major land resource region X1

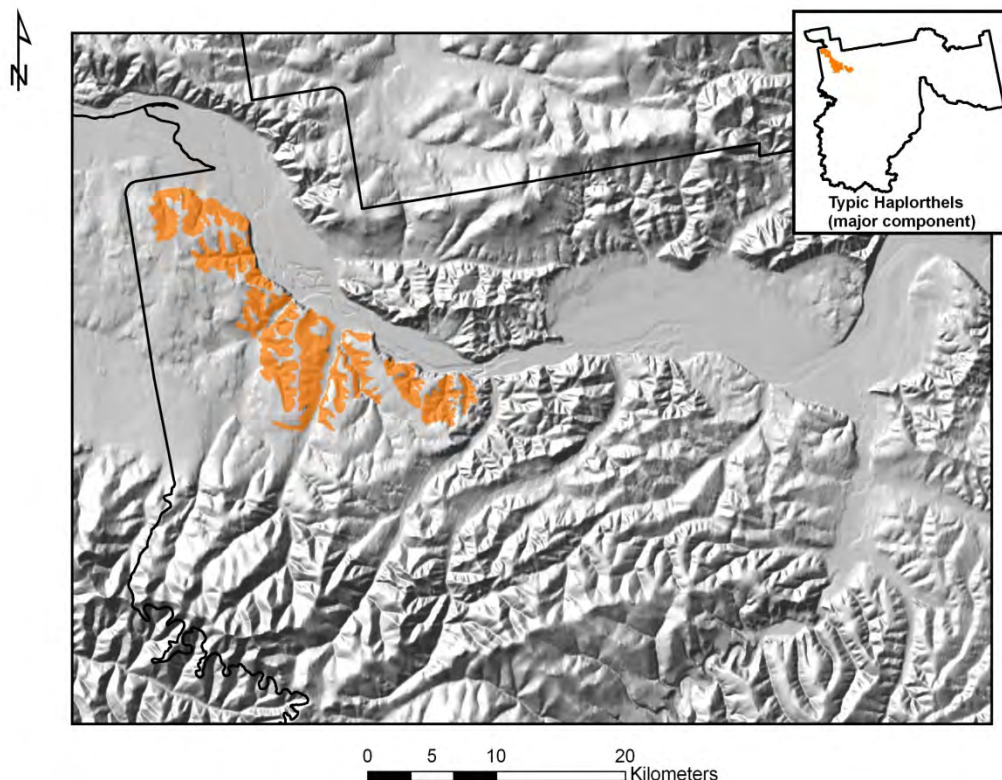
Extent: Moderately extensive throughout the alpine life zones in interior Alaska, in
areas of limestone and calcareous sedimentary deposits

Remarks

Diagnostic horizons and features:

Mollic epipedon—zone from 3 to 48 centimeters
Depth to paralithic contact—72 centimeters
Moisture regime—udic
Temperature regime—gelic
Temperature class—subgelic

Typic Haplorthels



Taxonomic Classification

Typic Haplorthels

Setting

Depth class: Moderately deep to deep
Drainage class: Moderately well drained
Landform: Hills
Parent material: Loess
Elevation: 100 to 330 meters
Slope: 20 to 35 percent
Annual precipitation: 152 to 254 millimeters
Annual temperature: -10 to -5 degrees C
Frost-free period: 70 to 100 days

Taxonomic Families

- Coarse-silty, mixed, superactive, nonacid, subgelic Typic Haplorthels

Representative Pedon Location

Location in the survey area: Latitude 65°2'4" north, longitude 141°37'40" west

Representative Pedon

X1—Typic Haplorthels, on a 20-percent slope of an escarpment with white spruce forest. (Colors are for moist soil; textures are apparent field textures.)

- Oi—0 to 3 centimeters; dark yellowish brown (10YR 4/4) slightly decomposed plant material; common medium, very fine, and fine roots throughout; noneffervescent; strongly acid (pH 5.5); clear smooth boundary.
- A—3 to 12 centimeters; very dark gray (2.5Y 3/1) loam; 16 percent clay; moderate coarse granular structure; friable, slightly sticky and slightly plastic; common medium, coarse, very fine, and fine roots throughout; 3 percent fine gravel; noneffervescent; strongly acid (pH 5.4); clear smooth boundary.
- C1—12 to 35 centimeters; dark gray (5Y 4/1) loam; 18 percent clay; moderate fine angular blocky structure; friable, slightly sticky and slightly plastic; common medium, coarse, very fine, and fine roots throughout; 5 percent fine gravel; noneffervescent; slightly acid (pH 6.5); gradual smooth boundary.
- C2—35 to 100 centimeters; 90 percent dark gray (5Y 4/1) loam; 18 percent clay; moderate very thick platy structure; friable, slightly sticky and slightly plastic; common medium, very fine, and fine roots throughout; 10 percent fine prominent dendritic yellowish brown (10YR 5/6) masses of oxidized iron with clear boundaries on surfaces along root channels; 5 percent fine gravel; noneffervescent; moderately acid (pH 6.0).
- C3f—100 to 152 centimeters; 90 percent dark gray (5Y 4/1) loam; 18 percent clay; massive; cemented; 10 percent fine prominent dendritic yellowish brown (10YR 5/6) masses of oxidized iron with clear boundaries on surfaces along root channels; 5 percent fine gravel; noneffervescent; moderately acid (pH 6.0).



Range in Characteristics

Soil moisture class: Udic

Mean annual soil temperature: -0.2 to -2.0 degrees C

Depth to permafrost: 50 to 120 centimeters

O horizon:

Color—hue of 7.5YR or 10YR, value of 2 to 4, chroma of 1 to 4

Texture—moderately decomposed plant material, slightly decomposed plant material, highly decomposed plant material

Organic matter content—60 to 90 percent

Reaction—ultra acid to neutral

A horizon (where present):

Color—hue of 10YR or 2.5Y, value of 2 to 4, chroma of 1 to 3

Texture—silt, silt loam, loam

Clay content—2 to 10 percent

Reaction—very strongly acid to neutral

Bw horizon (where present):

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 2 to 6

Texture—silt, silt loam, loam

Clay content—2 to 10 percent

Rock fragment content—0 to 15 percent gravel

Reaction—extremely acid to neutral

C horizon:

Color—hue of 10YR to 5Y, value of 2.5 to 5, chroma of 1 or 2

Texture—silt, silt loam, loam

Clay content—2 to 10 percent

Rock fragment content—0 to 15 percent gravel

Reaction—moderately acid to slightly alkaline

Cf horizon:

Color—hue of 10YR to 5Y, value of 2.5 to 5, chroma of 1 or 2

Texture—silt, silt loam, loam

Clay content—2 to 10 percent

Rock fragment content—0 to 15 percent gravel

Reaction—moderately acid to slightly alkaline

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Cryofluvents on lower flood plains
- X1—Typic Historthels on plains
- X1—Hydric Cryofibrists in depressions of plains

Drainage and Saturated Hydraulic Conductivity

Drainage class: Moderately well drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately high or high in the mineral soil layers; moderately slow in the permafrost

Use and Vegetation

Use: Wildlife habitat

Vegetation: Black spruce, mixed ericaceous shrubs, cottongrass, lichen

Distribution and Extent

Distribution: Throughout major land resource region X1

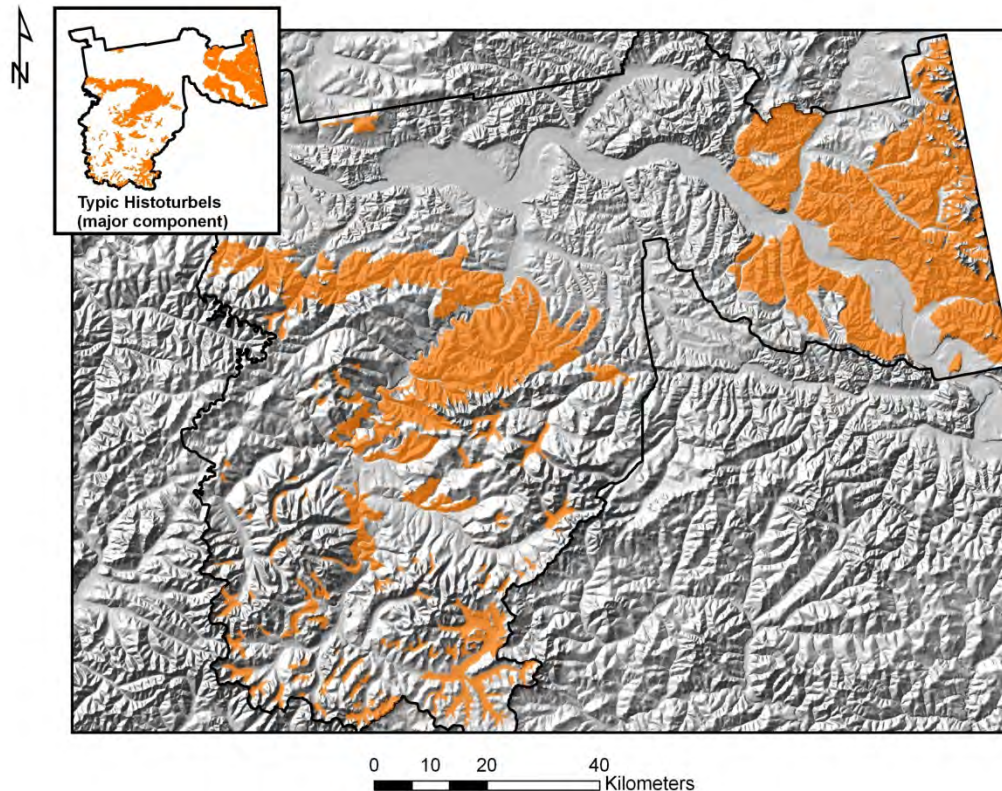
Extent: Moderate throughout interior Alaska

Remarks

Diagnostic horizons and features:

Depth to permafrost—100 to 152 centimeters
Soil temperature regime—gelic
Soil temperature class—subgelic

Typic Histoturbels



Taxonomic Classification

Typic Histoturbels

Setting

Depth class: Shallow to deep
Drainage class: Very poorly drained or poorly drained
Landform: Loess plains and hills, mountains
Parent material: Organic material over silty, loamy, or gravelly cryoturbate
Elevation: 279 to 1,350 meters
Slope: 0 to 30 percent
Annual precipitation: 245 to 824 millimeters
Annual temperature: -7 to -2 degrees C
Frost-free period: 20 to 110 days

Taxonomic Families

- Loamy-skeletal, mixed, superactive, acid, subgelic Typic Histoturbels
- Coarse-silty, mixed, superactive, acid, subgelic Typic Histoturbels

- Coarse-loamy, mixed, superactive, acid, subgelic Typic Histoturbels
- Loamy-skeletal, mixed, superactive, acid, subgelic Typic Histoturbels

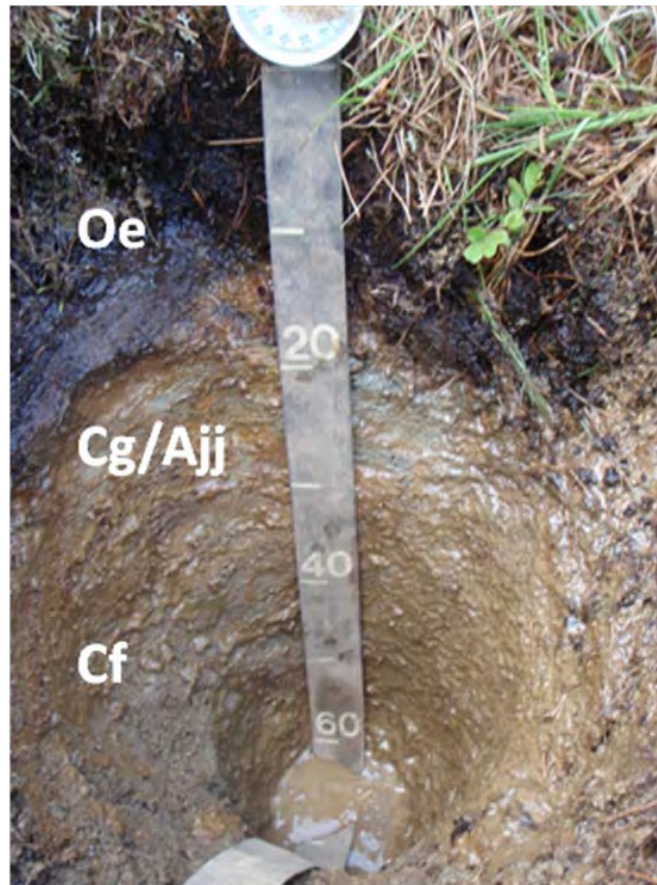
Representative Pedon Location

Location in the survey area: Latitude 65°49'32" north, longitude 149°32'30" west

Representative Pedon

Typic Histoturbels on a gently sloping eolian plain with cottongrass tussock vegetation. (Colors are for moist soil; textures are apparent field textures.)

- Oi—0 to 12 centimeters; very dark brown (7.5YR 2.5/2) peat; many medium, common coarse, and many fine roots; slightly acid (pH 6.5); clear wavy boundary.
- Oe—12 to 22 centimeters; black (7.5YR 2.5/1) mucky peat; many medium, common coarse, and many fine roots; slightly acid (pH 6.5); abrupt wavy boundary.
- Cg/Ajj—22 to 35 centimeters; 35 percent very dark brown (7.5YR 2.5/3) and 60 percent dark gray (5Y 4/1) silt loam; 5 percent clay; massive; firm, nonsticky and nonplastic; common medium and many fine roots; 5 percent fine strong brown (7.5YR 4/6) masses of oxidized iron with sharp boundaries; neutral (pH 6.7); clear wavy boundary.
- Cf—35 to 152 centimeters; very dark gray (5Y 3/1) permanently frozen silt loam; neutral (pH 6.8).



Range in Characteristics

Soil moisture class: Aquic

Mean annual soil temperature: -0.2 to -1 degree C

Depth to permafrost: 30 to 90 centimeters

Thickness of histic epipedon: 20 to 36 centimeters

O horizon, and O part of Oa/Cgjj and Cg/Oajjf horizons:

Color—hue of 10R to 10YR, value of 2 to 4, chroma of 1 to 4

Organic matter content—60 to 90 percent

Reaction—ultra acid to slightly acid

A horizon and A part of Cg/Ajj horizon:

Color—hue of 5YR to 10YR, value of 2 to 4, chroma of 1 to 3

Texture—silt loam, mucky silt loam, loam

Clay content—0 to 15 percent

Silt content—55 to 75 percent

Sand content—25 to 35 percent

Organic matter content—10 to 20 percent

Reaction—very strongly acid to moderately acid

C and Cg horizons and Cg part of Cg/Oajjf horizon (where present):

Color of C horizon—hue of 10YR to 5GY, or neutral; value of 3 to 5; chroma of 1 or 2

Redoximorphic concentrations—hue of 7.5YR to 2.5Y, value of 3 or 4, chroma of 4 to 6

Texture—silt, silt loam, very fine sandy loam, fine sandy loam, loam, stratified sand to silt

Clay content—0 to 8 percent

Silt content—30 to 85 percent

Sand content—10 to 65 percent

Organic matter content—0 to 5 percent

Rock fragment content—0 to 65 percent gravel and cobbles

Reaction—very strongly acid to neutral

Cf horizon, and 2Cgf horizon (where present):

Color—hue of 10YR to 5Y, value of 2 to 4, chroma of 1 to 3

Redoximorphic concentrations—hue of 7.5YR to 2.5Y, value of 3 or 4, chroma of 4 to 6

Texture—silt, silt loam, very fine sandy loam, fine sandy loam, loam, stratified sand to silt

Clay content—0 to 8 percent

Silt content—30 to 80 percent

Sand content—10 to 65 percent

Organic matter content—0 to 2 percent

Rock fragment content—0 to 65 percent gravel and cobbles

Reaction—strongly acid to neutral

Geographically Associated Soils in the Interior Alaska Resource Region (X1)

- X1—Typic Historthels on similar landscapes in the boreal life zones
- X1—Hydric Cryofibrists in depressions in the boreal life zones
- X1—Typic Haplogelepts on plane or convex mountain slopes
- X1—Typic Dystrogelepts on convex or plane mountain slopes

Drainage and Saturated Hydraulic Conductivity

Drainage class: Very poorly drained or poorly drained

Saturated hydraulic conductivity: Very high in the organic layers, moderately high or high in the mineral soil layers, very low in the permafrost

Use and Vegetation

Use: Wildlife habitat, agriculture, urban development

Native vegetation: Stunted spruce/cottongrass tussock woodland, cottongrass tussock meadow, stunted spruce-tamarack/cottongrass tussock woodland, stunted spruce/ericaceous woodland, alpine cottongrass tussock meadow, and alpine scrub types. In the boreal life zones, wildfire and post-fire succession results in a variety of herbaceous, scrub, and hardwood vegetation types.

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Extensive throughout the boreal forests, moderately extensive in the subalpine and alpine life zones of interior Alaska

Remarks

Diagnostic horizons and features:

Histic epipedon—meets requirement when mixed from 0 to 22 centimeters

Gelic material—zone from 22 to 35 centimeters

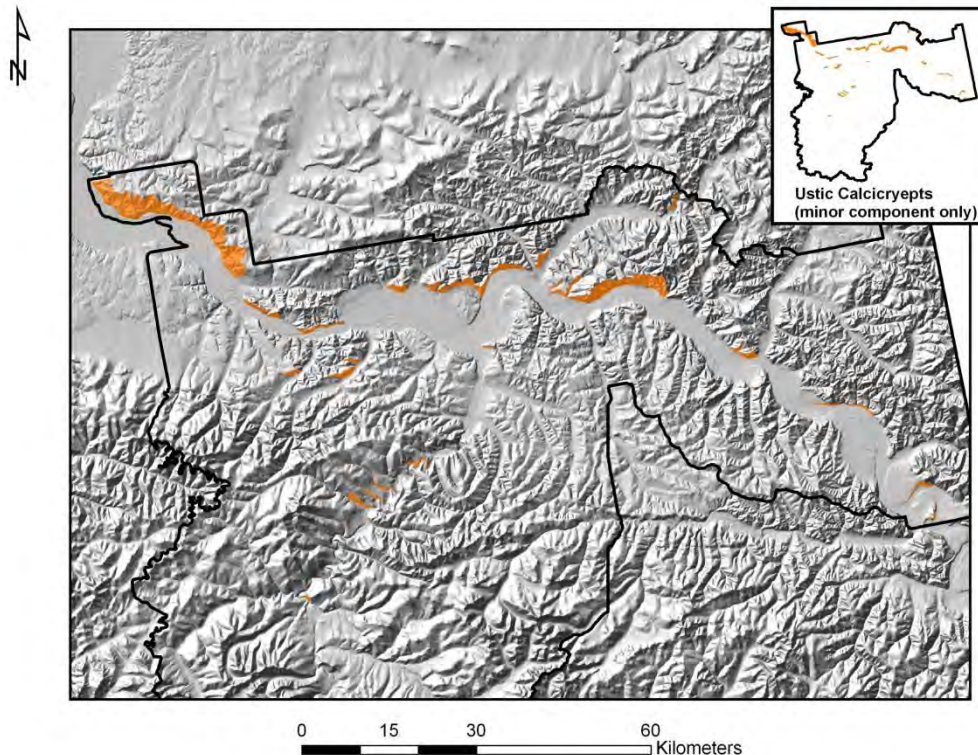
Depth to permafrost—35 to 152 centimeters

Aquic conditions—zone from 28 to 35 centimeters

Depleted matrix—zone from 22 to 35 centimeters

Redoximorphic concentrations—zone from 22 to 35 centimeters

Ustic Calcicrypts



Taxonomic Classification

Ustic Calcicryepts

Setting

Depth class: Deep or very deep

Drainage class: Excessively drained

Landform: Escarpments

Parent material: Gravelly colluvium derived from argillite

Elevation: 190 to 425 meters

Slope: 50 to 100 percent

Aspect: South

Annual precipitation: 245 to 519 millimeters

Annual temperature: -5 to -2 degrees C

Frost-free period: 20 to 110 days

Taxonomic Family

- Loamy-skeletal, mixed, superactive Ustic Calcicryepts

Representative Pedon Location

Location in the survey area: Latitude 65°12'20" north, longitude 141°44'19" west

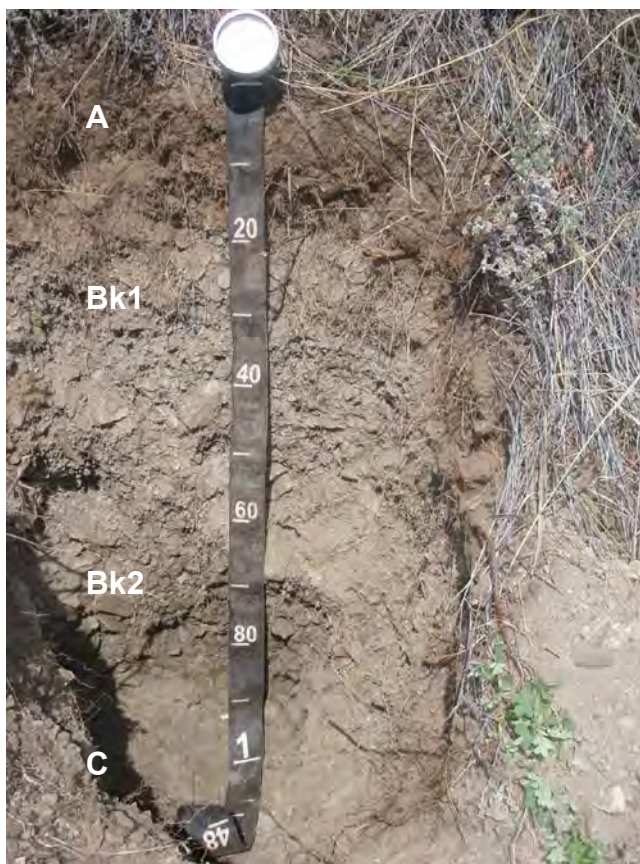
Representative Pedon

Ustic Calcicryepts on a steep, south-facing backslope of an escarpment with artemisia and aspen. (Colors are for moist soil; textures are apparent field textures.)

A—0 to 13 centimeters; very dark brown (10YR 2/2) sandy loam; moderate fine granular structure; very friable; many very fine roots; noneffervescent; slightly alkaline (pH 7.8); clear wavy boundary.

Bk1—13 to 60 centimeters; dark grayish brown (2.5Y 4/2) very gravelly sandy loam; moderate very fine subangular blocky structure; friable; common very fine and medium roots; 30 percent gravel and 7 percent cobbles; 25 percent carbonate coatings on rock fragments; finely disseminated carbonate in matrix; violently effervescent; moderately alkaline (pH 8.1); clear wavy boundary.

Bk2—60 to 152 centimeters; dark gray (2.5Y 4/1) very gravelly sandy loam; moderate fine subangular blocky structure; friable; common very fine and medium roots; 30 percent gravel and 7 percent cobbles; finely disseminated carbonate in matrix; slightly effervescent; strongly alkaline (pH 8.6).



Range in Characteristics

Soil moisture class: Ustic

Mean annual soil temperature: 1 to 5 degrees C

A horizon:

Color—value of 2 to 4, chroma of 1 to 3
Texture—silt loam, loam, silt, sandy loam
Clay content—2 to 15 percent
Silt content—47 to 83 percent
Sand content—9 to 49 percent
Organic matter content—1 to 11 percent
Rock fragment content—0 to 30 percent total, including 0 to 20 percent stones, 0 to 70 percent channers, and 0 to 40 percent flagstones
Calcium carbonate equivalent—0 to 4 percent
Electrical conductivity (millimhos per centimeter)—2.5 to 6
Reaction—neutral to moderately alkaline

Bk horizon:

Color—hue of 10YR or 2.5Y, value of 3 to 5, chroma of 1 to 3
Texture—loam, silt loam
Clay content—2 to 15 percent
Silt content—30 to 53 percent
Sand content—33 to 55 percent
Organic matter content—0 to 8 percent

Rock fragment content—25 to 50 percent total, with 0 to 20 percent stones, 0 to 70 percent channers, and 0 to 40 percent flagstones
Calcium carbonate equivalent—5 to 9 percent
Electrical conductivity (millimhos per centimeter)—4 to 8
Reaction—moderately alkaline to strongly alkaline

BC and CBk horizons (where present):

Color—hue of 10YR or 5Y, value of 3 to 4, chroma of 1 or 2
Texture—silt loam, sandy loam
Clay content—0 to 5 percent
Silt content—20 to 40 percent
Sand content—55 to 75 percent
Organic matter content—0 to 6 percent
Rock fragment content—55 to 85 percent total, with 0 to 20 percent stones, 0 to 70 percent channers, and 0 to 40 percent flagstones
Calcium carbonate equivalent—4 to 6 percent
Electrical conductivity (millimhos per centimeter)—3 to 6
Reaction—moderately alkaline to strongly alkaline

C, Cr, and Ck horizons (where present):

Color—value of 2.5 to 4, chroma of 1 to 4
Texture—silt loam, sandy loam, channers
Clay content—1 to 10 percent
Silt content—17 to 74 percent
Sand content—24 to 74 percent
Organic matter content—0 to 4 percent
Rock fragment content—55 to 97 percent total, with 0 to 20 percent stones, 0 to 70 percent channers, and 0 to 40 percent flagstones
Calcium carbonate equivalent—3 to 5 percent
Electrical conductivity (millimhos per centimeter)—2.5 to 6
Reaction—slightly alkaline or moderately alkaline

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Cryorthents on north-facing backslopes
- X1—Ustic Haplocrypts proximal to the Yukon River
- X1—Typic Haplocrypts distal from the Yukon River

Drainage and Saturated Hydraulic Conductivity

Drainage class: Somewhat excessively drained or excessively drained

Saturated hydraulic conductivity: Moderately high or high in the mineral soil layers

Use and Vegetation

Use: Wildlife habitat

Vegetation: Sagebrush, moss, lichen

Distribution and Extent

Distribution: Throughout major land resource region X1

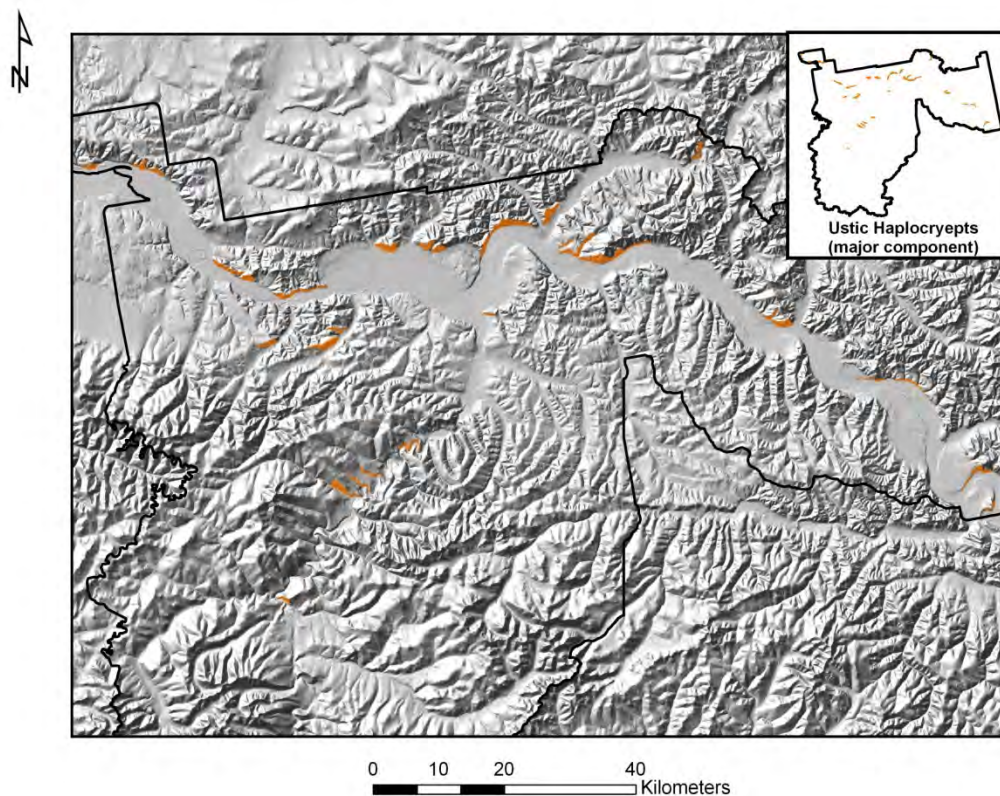
Extent: Limited throughout interior Alaska

Remarks

Diagnostic horizons and features:

Ochric epipedon—zone from surface to a depth of 13 centimeters
Secondary carbonates—zone from 13 to 93 centimeters
Calcic horizon—zone from 13 to 93 centimeters
Soil temperature regime—cryic

Ustic Haplocryepts



Taxonomic Classification

Ustic Haplocryepts

Setting

Depth class: Very deep

Drainage class: Excessively drained

Landform: Escarpments

Parent material: Organic material over gravelly colluvium

Elevation: 259 to 667 meters

Slope: 55 to 85 percent

Aspect: South

Annual precipitation: 250 to 519 millimeters

Annual air temperature: -5 to -3 degrees C

Frost-free period: 20 to 110 days

Taxonomic Family

- Loamy-skeletal, mixed, superactive Ustic Haplocryepts

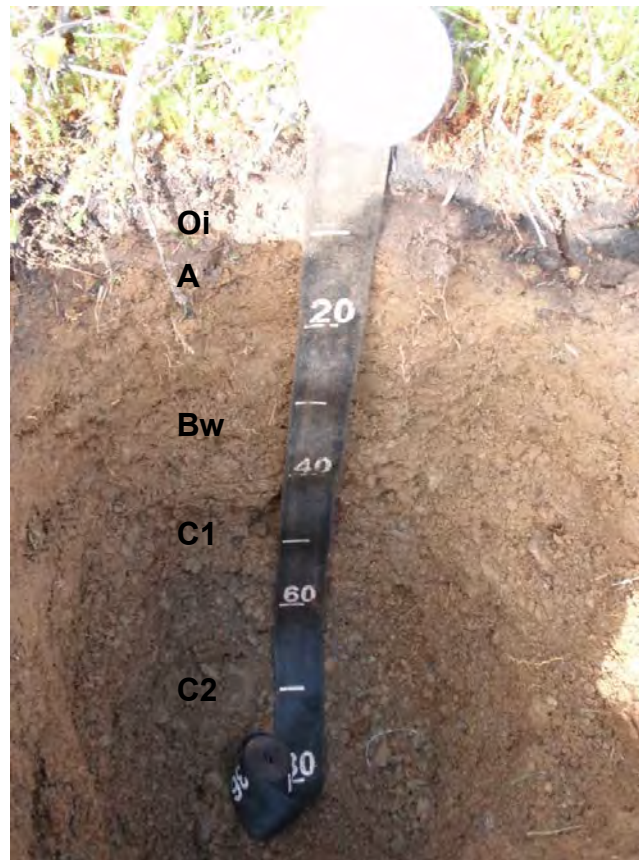
Representative Pedon Location

Location in the survey area: Latitude 65°18'18" north, longitude 143°9'39" west

Representative Pedon

Ustic Haplocryepts on a steep, south-facing backslope of an escarpment with artemisia and aspen. (Colors are for moist soil; textures are apparent field textures.)

- Oi—0 to 5 centimeters; dark yellowish brown (10YR 3/4) slightly decomposed plant material; common medium, very fine, and fine roots; noneffervescent; neutral (pH 7.2); clear smooth boundary.
- A—5 to 8 centimeters; dark brown (10YR 3/3) channery silt loam; 8 percent clay; weak very fine granular structure; very friable, nonsticky and nonplastic; common medium, very fine, and fine roots; 15 percent channers; noneffervescent; slightly alkaline (pH 7.4); clear smooth boundary.
- Bw—8 to 45 centimeters; dark yellowish brown (10YR 4/4) channery silt loam; 8 percent clay; weak fine granular structure; very friable, nonsticky and nonplastic; common very fine and fine roots; 30 percent channers; noneffervescent; neutral (pH 7.3); clear smooth boundary.
- C1—45 to 57 centimeters; dark yellowish brown (10YR 4/6) very channery silt loam; 3 percent clay; massive; loose, nonsticky and nonplastic; common fine roots; 45 percent channers; noneffervescent; neutral (pH 7.2); clear smooth boundary.
- C2—57 to 152 centimeters; light olive brown (2.5Y 5/4) extremely channery silt loam; massive; loose, nonsticky and nonplastic; 82 percent channers; noneffervescent; neutral (pH 7.1).



Range in Characteristics

Soil moisture class: Ustic

Mean annual soil temperature: 1 to 5 degrees C

O horizon:

Rock fragment content—0 to 3 percent stones, 5 to 35 percent flagstones, 10 to 58 percent channers

A horizon:

Color—value of 2 to 4, chroma of 1 to 3

Texture—silt loam, loam, silt, sandy loam

Clay content—2 to 15 percent

Organic matter content—1 to 11 percent

Rock fragment content—30 to 60 percent total, including 0 to 3 percent stones, 5 to 35 percent flagstones, and 10 to 58 percent channers

Calcium carbonate equivalent—0 to 4 percent

Reaction—strongly acid to moderately alkaline

Bw horizon:

Texture (less than 2 millimeters)—silt loam, sandy loam, loam

Clay content—2 to 15 percent

Rock fragment content—35 to 88 percent total, including 0 to 3 percent stones, 5 to 35 percent flagstones, and 10 to 58 percent channers

Calcium carbonate equivalent—4 to 6 percent

Reaction—strongly acid to moderately alkaline

C horizon:

Texture (less than 2 millimeters)—silt loam, sandy loam, loam

Clay content—2 to 15 percent

Rock fragment content—55 to 95 percent total, including 0 to 3 percent stones, 5 to 35 percent flagstones, and 10 to 58 percent channers

Calcium carbonate equivalent—4 to 6 percent

Reaction—moderately acid to moderately alkaline

***Geographically Associated Soils in the
Interior Alaska Resource Region (X1)***

- X1—Typic Cryorthents on north-facing backslopes
- X1—Ustic Calcicryepts on adjacent slopes proximal to the Yukon River

Drainage and Saturated Hydraulic Conductivity

Drainage class: Somewhat excessively drained or excessively drained

Saturated hydraulic conductivity: Moderately high or high in the mineral soil layers

Use and Vegetation

Use: Wildlife habitat

Vegetation: White spruce, russet buffaloberry, common juniper, kinnikinnick

Distribution and Extent

Distribution: Throughout major land resource region X1

Extent: Limited extent throughout interior Alaska

Remarks

Diagnostic horizons and features:

Ochric epipedon—zone from 5 to 8 centimeters

Cambic horizon—zone from 8 to 45 centimeters

Soil temperature regime—cryic

Formation of the Soils

Soil is the unconsolidated mineral and organic material on the surface of the earth that serves as the natural medium for the growth of land plants (Soil Survey Division Staff, 1993). Many physical, chemical, and morphological properties and characteristics of soil differ from the material in which it was derived. Environmental factors such as climate, parent material, topography, and living organisms, all acting over time, influence soil development. The influence of any one of these factors varies from place to place, but the interaction of all of them determines the kind of soil that forms. The exact combination of physiochemical and biological reactions that transforms material into the soil horizons of a specific soil cannot be determined with certainty. Soil processes are best described as a group of soil-forming factors with associated characteristics that may be observed in the field. The fluvial process, described in the section "Soil Processes and Indicators," provides an example of a group of soil-forming factors. The individual soil-forming factors, including climate, parent material, topography, living organisms, and time, are discussed in this section with reference to important processes associated with each factor. A discussion on the major soil and geomorphic processes identified for the survey area and on permafrost and soil formation are also provided.

Climate

The climate of the survey area, which is described in greater detail in the section "General Nature of the Survey Area," is characterized by a distinctive climatic zone corresponding to the Polar Domain (Bailey and others, 1994). The climate of the Polar Domain of the Alaska Range, commonly referred to as the interior climatic zone, is continental and is characterized by long, cold winters; short, warm summers; relatively low precipitation; and a moisture deficit during the growing season.

The interior climatic zone is within the zone of discontinuous permafrost (Péwé, 1975). Permafrost, though extensive in the lowlands of interior Alaska, is less common in the upland mountainous areas and constitutes. A more complete description of the complex relationship between soils and permafrost is provided in the section "Permafrost and Soil Formation."

Periodic winds in winter are also a distinctive climatic characteristic of the area. Winds distribute snow disproportionately across the landscape, resulting in large drifts on leeward slopes and extensive areas of barren, windswept ridges and flats. Areas clear of snow have deep seasonal frost or permafrost. The microrelief in these areas includes periglacial features such as circles, solifluction lobes, and turf hummocks within the alpine biome. In swales and on leeward slopes where snow accumulates, the thick insulating blanket of snow prevents the formation of deep frost in winter and the slow release of water saturates the soils in these areas and downslope of the drifts into summer.

The interior climatic zone is subject to a significant moisture deficit in most summers (evapotranspiration exceeds precipitation). As a result, the amount of water available for weathering and translocation of soil minerals is low. Soil horizon expression generally is weak to moderate in medium textured material, and braunification is the dominant soil process in well drained soils that are free of permafrost. An exception is areas of coarse-textured material on uplands in which more weathering and

translocation of minerals takes place, such as in the soil component D31—Boreal forest rocky colluvial slopes.

The terminology used to describe and classify the soils in the survey area reflects the cold climate of interior Alaska (See “Classification of the Soils.”). In the gravelly alpine mountainous areas, the most extensive soil order is Inceptisols. Within this order, Gelepts is the most common suborder. “Gel” indicates the coldest suborder in the order. Definitive characteristics of the suborder include a mean annual soil temperature of less than 0 degrees C and a lack of permafrost within about 2 meters of the surface. The highly conductive gravelly soils are subject to major seasonal swings in soil temperature. The soil temperature in winter at a depth of about 51 centimeters may be -18 degrees or lower late in February and peak at 15 degrees or higher in mid-August, as illustrated by soil temperature measurements from soils in this survey area as well as similar soils in Denali National Park (Clark and Duffy, 2005). The mean annual soil temperature typically is below -1 degrees.

The presence of permafrost in the soils underscores the cold nature of the regional climate. Gelisols (soils with permafrost within a depth of 2 meters) is the next most common soil order in the area. These soils are the product of a cold climate in conjunction with the insulating effect of a thick organic mat overlying loamy or silty mineral soils with characteristic low conductivity properties. In contrast to Gelepts, Gelisols have only slight seasonal changes in soil temperature and the mean annual soil temperature is slightly below 0 degrees C. Permafrost is at a shallow to moderate depth in these soils.

Parent Material

Soil parent material includes organic and mineral material. Organic material consists dominantly of nonliving, partially decomposed to highly decomposed plant material. A surface mat of organic material covers most of the soils in the survey area, with the exception of exposed bedrock, active talus slopes, and soils on low flood plains. The thickness of the organic material varies greatly. On steep metastable mountain slopes, the organic mat is discontinuous and generally less than 2.5 centimeters thick. On plains and hills in the alpine and boreal biomes, the mat generally is 2.5 to 40.5 centimeters thick, and in wet depressions it ranges from about 50 centimeters to several meters thick. The origin of the organic material that forms these mats is tied to three specific soil processes—braunification, podzolization, and hydromorphism.

On well drained mineral soils, a dynamic equilibrium exists between organic material production and decomposition. Percolation of water through mineral soils removes soil bases and acidifies the soils. Acidic surface conditions favor both the establishment of moss and the preservation of surface litter from vascular plants. Long-term preservation of organic material is enhanced by the low soil temperatures, which suppress microbial activity. Significant accumulations of organic material are rare in well drained soils, however, because of the high turnover of organic material from oxidation. The organic mat on well drained soils typically is only a few centimeters thick and is rarely more than 20 centimeters thick. The soil processes associated with soil acidification and organic mat establishment on well drained soils are braunification and podzolization.

Thicker organic deposits commonly are associated with saturated soil conditions, where organic material accumulates under acidic, saturated, anaerobic conditions. These conditions are represented by the process of hydromorphism. Though not extensive in the survey area, most soils that have a moderately thick hydromorphic organic surface mat (20 to 50 centimeters thick) are in more gently sloping areas where a shallow water table is perched over permafrost. Soils that have thick hydromorphic organic deposits (50 to 150 centimeters thick or more) and do not have

permafrost are in depressions on all landscapes throughout the area, but they are of minor extent.

Mineral parent material includes colluvial, glacial, fluvial, and eolian deposits derived from various rock types, including sedimentary, igneous, and metamorphic rock. In some of the mountainous regions, the soils formed dominantly in gravelly colluvium derived from various rock types. The geologic change over short distances makes correlating specific soil properties to individual rock types difficult at the scale used for this survey. The soils are loam or sandy loam and have a moderate level of cations such as calcium, magnesium, and potassium.

Other parent material includes alluvium, glacial drift, and eolian material. The physical and chemical properties influence the type of soil that forms. The soil component D31—Subalpine scrub silty till slopes is an example of an upland soil comprised of a thin layer of loess over coarse-textured glacial outwash deposits. The coarse, porous material maximizes percolation of rainwater and melting snow, which promotes weathering and translocation of minerals in the soils. The coarser soils on uplands have the warmest summer soil temperature of the soils in the region, which enhances biological activity and furthers the weathering processes. Soils that formed in loess over till or colluvium of mixed lithology have significantly finer textures and a lower rate of permeability, which result in only moderate soil horizon development and expression.

The texture of the unconsolidated material influences the thermal properties of the soils and whether or not permafrost is present. Soils that have a thicker loess cap are characterized by silty textures, a low content of rock fragments, and relatively low thermal conductivity properties; thus, permafrost is common in these soils. Thermal conductivity properties are discussed further in the section “Permafrost and Soil Formation.”

Topography

Topography influences the degree of downslope movement of material, the collection or dispersion of water, and the soil temperature and moisture relationships associated with aspect and snow distribution. Slope steepness is an example of a topographic influence on soil formation. Steeper slopes are inherently unstable and are subject to more downslope movement, conditions unfavorable to soil weathering and differentiation of soil horizons. For example, the barren rock outcrops and scree slopes on the steep mountains above about 900 meters in elevation are subject to dominantly colluvial processes and have no apparent soil development.

In other areas, the influence of topography combines with the influence of one or more of the other soil-forming factors. Soils on mountains (topography) with a continuous mat of vegetation (living organisms) illustrate the combined influences of two soil-forming factors. Below an elevation of about 900 meters, even on very steep slopes, colluvial processes are offset somewhat by the effect of the dense root and vegetation mat. This biological mat stabilizes soils, favoring the braunification process. These soils have a thin organic mat and a thin, dark-colored A horizon underlain by a moderately thick, yellowish brown Bw horizon.

Topography also influences the accumulation of water on the landscape. On various landforms in the alpine and subalpine biomes, snow accumulates in swales and depressions and drifts are present until late in spring or early in summer. As drifts in swales melt, a steady discharge of water saturates the soils downslope, promoting anaerobic conditions and the accumulation of organic matter in the mineral surface layer. Closed depressions do not have surface drainage outlets and remain saturated for longer periods during the growing season. Prolonged anaerobic conditions associated with saturation favor the accumulation of thick organic deposits.

Topography also affects flooding. The frequency of flooding and level above active river channels influence the texture of flood deposits and the type of vegetation that grows. Areas adjacent to active channels are regularly scoured by high velocity floodwaters, and the soils are gravelly and have a water table near the surface. Accumulation of calcium carbonate and other salts as a result of fluvial processes affect early successional plant communities along flood plains. These processes along the Tanana River flood plain near Fairbanks were described by Van Cleve and others (Van Cleve and others, 1993). Topographic-vegetation relationships in these areas include the presence of young willow scrub and herbaceous communities that established between flooding events or survived previous events. In higher, less frequently flooded positions, the velocity of overbank flooding is slowed by the dense stands of mixed tall alder-willow scrub. The alluvium in these areas consists of finer textured, stratified sandy and silty deposits.

Topographic exposure also influences the type of soils that form. In mountainous alpine areas, the vegetation in depressions on slopes where snow accumulates is in stark contrast. Swales remain snow covered until late in spring, which favors herbaceous vegetation, and remain saturated until late in spring.

Patterned ground is a microrelief feature associated with the mixing of the soil by frost action (cryoturbation). This feature is throughout the detailed soil map unit Alpine Rounded Mountains with Extensive Permafrost. Two general groups of patterned ground are identified and include features with and without permafrost within a depth of 1.5 meters of the soil surface. Common patterned ground features in areas of permafrost include turf hummocks, peat mounds, ice wedge polygons, and circles. Earth hummocks, another common microfeature, generally do not have permafrost.

Earth and turf hummocks are irregular or bumpy features with local horizontal and vertical relief of as much as about 50 centimeters. Earth hummocks are limited to more gently sloping positions in the mountainous alpine biome. Turf hummocks are extensive throughout the alpine biome. Both kinds of hummocks are the result of ice segregation, differential freezing, and differential ground heaving with or without permafrost (Embleton and King, 1968; Sigafos and Hopkins, 1951). The origin of these features has been attributed to deeper frost penetration in micro-low positions. The commonly saturated conditions conduct cold temperatures downward, causing lateral thrusting or squeezing, often injecting mineral and organic material into or beneath the micro-highs, resulting in the formation of hummocks. Turf hummocks or cottongrass tussocks are common features on slopes of less than about 6 percent, and they are underlain by permafrost.

Solifluction lobes are elongated or lobate earth hummocks on steeper slopes with the long axis of the step orientated in a downslope direction and overall slopes of about 8 to 35 percent. The process of formation is similar to that of hummocks, with the addition of a significant gravity factor because of the steep slopes. During freezing, ice crystals grow and displace soil particles in a direction controlled by the direction of freezing. The soil particles move toward the direction in which the frost enters and penetrates the ground. During periods of thawing, the particles resettle in a direction controlled by gravity. Thus, if the cooling surface is inclined, the displaced particles will resettle slightly downhill from their original position (Embleton and King, 1968).

Development of peat mounds is attributable to a thin cover of snow, which allows for deep frost penetration and frost heaving (Williams and Smith, 1989). These features are underlain by permafrost at a shallow depth. Peat mounds form discrete, irregularly spaced bumps about 1 meter across or more and several centimeters to 1 meter high or more. The drier peat near the surface of these elevated areas increases the overall insulating qualities of the peat, thus maintaining frozen soil conditions throughout summer and promoting the formation of ice crystals and masses. Abundant water from the adjacent wet meadows and ponds feeds the developing ice core of the mound. The free water in contact with the frozen core then freezes, increasing the size and

extent of the frozen core. Peat mounds commonly are formed as the ice core enlarges and pushes the surface up several centimeters or meters above the surrounding landscape.

Circles (or mud boils) are clusters of more or less circular features several centimeters or meters in diameter that have slightly raised centers and commonly are free of vegetation. Circles are throughout the alpine biome in the survey area, generally on slopes of less than 20 percent. Beneath the center of the circles, permafrost is intermittent and relatively deep in the soil profile. The troughs surrounding the circles are several centimeters or meters wide, support alpine scrub vegetation, and have a thick organic mat, permafrost at a shallow depth, and a shallow water table perched over the permafrost. The formation of circles is attributed to a process described as “diapirism,” which is the upward movement of relatively low density saturated soil material above the permafrost (Swanson and others, 1999). Soil material with low bulk density, as a result of high ice content, is just below the permafrost. This material has significantly lower bulk density than the overlying drier mineral soil material. As a result, upward movement of the low-density soil material is likely to occur when the soil surface is disturbed or the warm summer temperatures cause it to thaw. The flow upward to the surface forms the slightly elevated, commonly vegetation-free microfeature.

Living Organisms

Living organisms include animals and lower and higher plants. Many biochemical processes involving the cycling of different elements occur in soil where the organic compounds exuded by the roots, produced by microbial degradation of organic debris, provide the energy needed in the biological weathering process. Also, the mixing and breakdown of organic material by animals are important in soil formation.

Animals contribute to the mixing and decomposition of organic material in all of the soils in the survey area. Large mammals such as moose, caribou, black bear, and grizzly bear contribute locally to mixing of soils, but they rarely are responsible for determining the type of soil that forms.

Earthworms, though significant contributors in more temperate climates, are minor contributors because of their small size and very low density. Voles are significant contributors to the accumulation of surface organic matter and mixing in some soils. Thick accumulations of organic material commonly are on the soil surface as a result of extensive burrowing by voles, which possibly contributes to the thick, dark-colored mineral A horizon of soils.

The lower plants include moss, fungi, bacteria, and algae. Observing lower plants, especially microorganisms in a field setting, and correlating them to specific soil processes is very difficult and beyond the scope of this survey. In addition, it is difficult to isolate the exclusive role of micro-organisms in the soil system, considering their diversity and the proportion of the soil biota. The effectiveness of micro-organisms in decomposing rocks and minerals was demonstrated by Glazovskaya (Glazovskaya, 1950). He described fungi as the most destructive of the micro flora, producing chelating organic acids similar to fulvic and humic acids. Moss and lichen are the only lower plants consistently documented during this survey. The presence of a continuous layer of moss or lichen on the soil surface is indicative of soil stability and suggests that soil processes such as braunification and podzolization are active. Lack of a layer of moss suggests disturbance of the surface by colluvial processes, flooding, or fire or the presence of productive herbaceous plant communities that prevent the establishment of moss.

The higher plants are vascular, and they include trees, shrubs, grasses, and forbs. These living organisms have the most profound effect on the soils in the survey area. They contribute significantly to the organic matter content and stability of the soils.

Certain tree species such as spruce are susceptible to wildfire, which directly influences thermal properties and permafrost in some soils. In addition to the stabilizing effect of vegetation, various plant communities contribute to the braunification process as a result of the acidity of the litter. Precipitation percolating downward through surface litter and moss acidifies mineral soils. In subalpine areas, especially throughout the Three Fingers area, the resinous litter from shrub birch contributes to soil acidification and braunification. In the subalpine and boreal biomes, alder, which is a strong soil acidifier (Crocker and Major, 1955), and white spruce contribute to surface acidification, which promotes braunification.

In the high alpine mountains, at the upper limit of the treeline (about 800 to 1,000 meters in elevation), the vegetation is dominantly dwarf scrub and is considered metastable. Braunification and colluviation are the principle processes identified. A mosaic of shrub birch and lichen is extensive throughout the area on ridge crests of mountains and on glaciated hills, where microrelief changes dramatically over short distances. Ridges are exposed to wind and commonly have a sparse cover of alpine bearberry and lichen and a high percentage of exposed rock fragments. More protected concave to plane surfaces and leeward slopes of hills support shrub birch scrub. Soils that support shrub birch scrub have a relatively stable surface that is favorable for braunification and podzolization processes. Soils under shrub birch-ericaceous scrub communities are significantly more acid than those under other alpine communities. Reaction typically is extremely acid (pH 3.5 to 4.4) in the surface mineral layer under shrub birch and strongly acid or moderately acid (pH 5.1 to 6.0) under various dwarf scrub communities, including alpine bearberry, white mountain avens, and other low-growing, nonvascular plants. The presence of a gray, leached eluvial E horizon is indicative of acid leaching and podzolization and is more common in soils that support shrub birch scrub communities than in those that support other alpine scrub communities.

At treeline, low productivity white spruce forests and woodland commonly are on soils that have a seasonal water table that is near the surface and is perched over material that has low permeability, such as loamy alluvium or gravelly till. These soils have a thick A horizon enriched by nutrients from downslope movement of the water table.

The most productive forests in the survey area are on flood plains at lower elevations. The soils have a thick loamy alluvial mantle that is enriched by occasional, brief flooding and sediment deposition that provide favorable physical and chemical soil properties for productive forest establishment and maintenance.

Relationships exist between various scrub communities and soils in riparian areas throughout the survey area. These are best expressed in terms of relative elevation above active flood channels, with several discrete flood plain levels evident on the landscape. Low flood plain positions include primarily gravel bar areas. These areas have a high recurrence of flooding and commonly are adjacent to active flood channels that have sparse, if any, vegetation. With a slight increase in elevation above the active channel, the vegetation increases to a sparse cover of feltleaf willow scrub and herbaceous meadow communities in areas of primarily sandy alluvium. The upper boundary of the water table is at a depth of about 66 to 91 centimeters in summer (See ecological site description R231XY198AK—Boreal scrub sandy floodplain, low.). Middle flood plain positions have closed scrub poplar-willow scrub and alder scrub communities on well drained soils. The soils consist of a thin, commonly discontinuous organic mat over a thin mantle of stratified sandy and silty alluvium underlain by sand and gravel (See ecological site description F231XY189AK—*Populus balsamifera*.). The combination of the relatively dense scrub cover and the relative height above the active flood channel favors low velocity flood inundations and the accumulation of a thin mantle of stratified sand and silt. A thin, discontinuous surface organic mat and slight acidification of the A horizon suggests that the interval between individual flood

episodes is several years to decades. High flood plains make up the next discrete flood plain level. Flooding is infrequent and the ground surface is relatively stable, allowing the formation of a relatively thick, continuous organic mat and acidification of the A horizon. The interval between flooding events is likely decades, allowing for periods of stability that favor the replacement of scrub communities with more slow-growing forest species such as black spruce.

Dwarf spruce woodland, commonly referred to as taiga, is the most extensive historical climax plant community in the Interior Alaska Lowlands.

Time

The time that a soil is exposed to soil-forming processes also determines the degree of mineral weathering and horizon development. The soils in the survey area are grouped into four relative age categories—young, intermediate, old, and paleosols. Young soils are those subject to episodic or continuous disturbance that restricts the development of soil horizons other than a thin surface accumulation of organic material or organic enrichment of the mineral surface horizon. These soils do not have significant surface stability, and they range in age from months to decades. Included in this group are actively flooded soils and soils on steep scree and talus slopes.

Soils that are intermediate in age are those that are in dynamic equilibrium between a process that favors vertical percolation of water and horizon differentiation and a process that favors the destabilization or halting of the soil-forming processes. Generally, landform surfaces associated with soils of intermediate age typically are of the Holocene (less than 10,000 years old). Members of this group include well drained soils on moderately steep slopes with a continuous root mat, well drained soils on high flood plains and terraces, and soils on all landforms that have permafrost. With the exception of the soils that have permafrost, braunification is the most active process in these soils. Soil features indicative of the braunification process include a surface A horizon and subsurface Bw horizon. The destabilizing influence of the colluvial processes has minimized the degree of expression of the braunification process, and the total depth of the profile rarely extends to more than 51 centimeters. Also included within this age group are soils that have a thick surface organic horizon and associated permafrost and poor drainage. The presence of a thick organic mat and permafrost indicates a certain degree of surface stability. Destabilizing factors that may offset soil development include surface failure as a result of natural surface disturbance and frost churning (cryoturbation). The dominant process associated with these soils of intermediate age is hydromorphism. Specific soil indicators associated with hydromorphism include establishment of a thick, saturated organic mat and saturated conditions over permafrost.

Old soils are those that formed on landforms that are not subject to the significant destabilizing effects of slope, cryoturbation, or other processes that alter or halt weathering of soil minerals. The surface age is estimated to be early Pleistocene (9,000 to 250,000 years). This group of soils has the best expression and overall depth of soil horizon development under the current climate conditions. A typical sequence of mineral horizons includes an A, E, Bs, and BC horizon, and the sequence extends to a depth of 76 centimeters or more. Included in this group is the soil component D32—Boreal taiga loamy escarpment slopes. This component formed in sandy and gravelly colluvial deposits on escarpments.

Soil Processes and Indicators

Soil processes are defined as a combination of physiochemical and biological reactions that have transformed material into soil horizons. The factors of soil formation discussed in the previous sections are thought of as controls on processes that result in observable and measurable features. Simplified concepts of solution,

oxidation, reduction, hydrolysis, hydration, chelation, ionic substitution, synthesis, and crystallization have been applied to transformations of individual compounds and components of soils. Combinations of these elementary processes are believed to occur in the development of soils. Where a combination has been dominated by a particular process, or by a rate of a particular process, the resulting combination commonly has been given a name (Wilding and others, 1984). The primary processes of braunification, colluviation, fluvial processes, hydromorphism, and podzolization are described in the following paragraphs. Each process is related to an observable set of soil properties, or field indicators, used to establish dominant processes.

Colluviation is a depositional process by mass wasting or overland flow. Sediment deposited by mass wasting generally is nonsorted and nonstratified. Individual particles are not rounded. These characteristics distinguish colluvium from sediment deposited by fluvial processes (Longwell and others, 1969). Products of colluvial processes include talus and solifluction deposits. In the survey area, this process is enhanced by extreme temperature variations throughout the year. Multiple freeze-thaw cycles not only fracture exposed bedrock but also destabilize the slopes where the rock fragments accumulate. This process is extensive throughout the mountains and along river escarpments. Field indicators of this process include long plane slopes or conical features extending downslope from steep exposures of bedrock to the base of the slope. Soils within colluvial cones consist of nonsorted soil material with 30 percent angular rock fragments or more, by volume. The unstable surface on steep colluvial slopes results in the absence of soil horizons and the general lack of vegetation. On more stable, or metastable, colluvial slopes, a continuous organic mat underlain by an A, Bw, C, and R horizon sequence is more common.

Fluvial processes include the erosion, transportation, and deposition of alluvium by water. This process is a good example of the topographic and time factors of soil formation. Periodic flooding results in soils that exhibit minimal horizon development. Along low gradient streams, soils such as the component D31—Boreal woodland rocky low flood plains are subject to depositions of stratified sandy and silty sediment from low velocity floodwater. Along higher gradient streams, such as along the Charley River, high velocity floodwater deposits gravelly and cobbly alluvium as channel deposits. The higher flood plains along these higher gradient streams consist of loamy over sandy and gravelly alluvium. Landscape indicators of fluvial processes include the presence of barren or sparsely vegetated gravel bars, channels, and alluvial flats adjacent to active river channels as well as the presence of debris, ice-gouged trees, and watermarks on vegetation. Vegetation indicators of fluvial disturbance include the presence of young stands of fettleaf willow and alder shrub, herbaceous vegetation, or balsam poplar forests adjacent to stream channels. Soil indicators include stratification of sandy and silty sediment and buried organic layers and high soil reaction (pH) relative to soils on adjacent upland positions.

Fluvial processes in conjunction with other landscape factors result in variations in nutrient productivity among riparian systems. Two broad categories of alluvial soils have been identified in the survey area—soils with excess bases and soils without bases. The soils along the Yukon River contain excess bases. A specific fluvial process called enrichment defines these soils with excess bases. Enrichment includes the saturation or accumulation of basic soil metals such as calcium, magnesium, potassium, and sodium in surface soil layers. Enrichment includes the deposition of base-rich sediment by flooding and the concentration of bases in the upper part of the soil profile by upward diffusion of base-rich water from a near-surface water table to the drier soil surface during periods of dry, warm weather. Enrichment results in the accumulation of calcium and magnesium carbonate compounds that may form a white or brown crust on the soil surface. Soils with excessive carbonates effervesce when dilute hydrochloric acid is added. Effervescence commonly is observed in the surface mineral layers of the soil component D31—Boreal scrub sandy low flood plains of the

Boreal Low Flood Plains detailed soil map unit. On low flood plains, a pH of 7.6 or more in the surface mineral layers is also a general indication of enrichment.

Hydromorphism is associated with near-surface saturated conditions, and it occurs extensively throughout the survey area. It is a good example of the topographic factor of soil formation. Water collects locally in small, concave micro-positions above restrictive layers that have low permeability, such as till or permafrost, and act as regional features that may underlie river valleys and basins. This process includes the chemical reduction, mobilization, and movement of soluble minerals and the formation of a thick surface organic mat under saturated anaerobic conditions. Plant roots and soil microbes deplete the soil oxygen in these saturated soils, resulting in anaerobic conditions. Subsequently, iron and manganese, the primary pigments in mineral soils, are converted to reduced forms. These reduced compounds are mobile in the soil solution and are easily stripped from the soil by the water table. Soils stripped of mineral pigments in this way have neutral gray to bluish colored features that are referred to as redoximorphic depletions. These soil morphological features are indicated as a Cg horizon. The mobilized minerals are transported through the soil by groundwater to an oxidized zone. Mineral oxidation and precipitation occur, imparting a yellowish to reddish color to the soil. These features are referred to as redoximorphic concentrations. In areas where the water table fluctuates near the surface, the soil environment commonly alternates between reduced and oxidized states and the soils frequently display a complex mottled pattern of both reddish, oxidized concentrations and grayish, reduced color depletions. Permanently saturated soils commonly have a thick organic layer. The accumulation and stability of organic deposits in these soils is attributed to prolonged saturation and the associated anaerobic environment.

Three general groups of hydromorphic soils are in the survey area. These include aquifer-wet, topographically-wet, and climatically-wet soils. Aquifer-wet soils include those on flood plains and in broad depressions that have a local or regional water table in the profile. Evidence of aquifer-wet soils or extensive aquifer systems include the presence of multiple oxbows and cutoff meanders on flood plains. Soil indicators of hydromorphism on these landforms include a water table near the surface during much of the year, abundant redoximorphic depletions and concentrations, and a thick, saturated organic layer. Vegetation indicators include a prevalence of wet sedge meadow or willow/sedge meadow communities.

Topographically-wet soils include those in open swales and closed depressions where the source of water is run-in from adjoining uplands or from precipitation. Water is held near the surface for prolonged periods because of the relatively low permeability of the underlying material. Topographically-wet mineral soils in swales or nivation hollows occupied by snowbeds are common in the alpine and subalpine biomes. Saturated conditions result from melting snowdrifts that remain well into summer. Soils in these depressions normally are slightly more nutrient-rich than adjoining well drained soils and have a water table at or very near the surface during part of the growing season. Indicators of hydromorphism in these soils include a thick organic surface layer or a thick organic-rich mineral layer 20 centimeters thick or more. Indicators of seasonally saturated topographically-wet soils include a thick, dark-colored mineral surface horizon and faint reddish redoximorphic concentrations in the subsoil.

Climatically-wet soils are saturated over permafrost. These soils are very poorly drained or poorly drained and have permafrost within about 2 meters of the soil surface in summer. Melting snow, precipitation in summer, and progressive melting of the active layer in summer maintain the saturated conditions. The surface organic layers are extremely acid or very acid, and the mineral horizons vary in acidity. Indicators of hydromorphism in these soils include a surface organic mat 20 centimeters thick or more, weakly expressed to moderately expressed redoximorphic features, and saturated conditions in the thawed zone above the

permafrost. Low productivity scrub and sedge communities on uplands and patterned ground features, specifically circles, are indicators of climatically-wet soils and the presence of permafrost.

Braunification is the release of iron from primary minerals by oxidation or hydration, which gives the soil matrix a brownish, reddish brown, or red color (Wilding and others, 1984). This process is a good example of the joint influences of time and topography. Braunification is common on vegetated mountain slopes, terraces, plains, and hills throughout the uplands of the survey area. The process is common in soils on relatively stable surfaces not influenced by flooding or excessive downslope movement of soil material. Downward movement of water through the soil profile and free movement of oxygen promote weathering of primary iron minerals. Surface stability promotes the removal of excess basic metal cations from the soil through leaching and plant use. This is normally accompanied by a lowering in soil reaction (pH) of the surface layer. Weathering and translocation of primary soil minerals, including iron and organic matter, accompany soil acidification. Surface indicators of braunification include the presence of a continuous surface organic mat or dwarf scrub cover and a thin, dark-colored surface mineral horizon, which are indicative of surface stability. Another soil indicator is the presence of a light brown to yellowish brown subsurface layer, which is evidence of weathering and translocation of primary soil minerals. Soil reaction also gradually increases with depth.

Podzolization includes the chelation and chemical migration of aluminum, iron, and organic matter downward in the soil profile, leaving silica in the leached layer (Wilding and others, 1984). This process is a good example of the combined influences of climate and parent material. This process of alteration and translocation is normally active under extremely acid soil conditions that generally are associated with high precipitation. Indicators of this process include a thin, gray, leached surface E horizon over a brown Bs subsoil horizon. Podzolization is more dependent on specific site and soil properties, including coarse-textured soil material and the presence of shrub birch, a known soil acidifier.

Cryoturbation includes the churning of surface and subsoil layers by frost action. The microrelief features associated with this process commonly are referred to as periglacial features. This process is well expressed within the thin, annually thawed zone in soils underlain by permafrost, but permafrost is not requisite. Indicators of cryoturbation include disrupted and broken soil horizons, mixing of material from different horizons, and mechanical sorting of material (Agriculture Canada Expert Committee on Soil Survey, 1987). Cryoturbation is most evident in soils with abundant soil moisture, a high rate of cooling (affected by vegetation and snow cover), and frequent freeze-thaw cycles (Embleton and King, 1968). The presence of earth hummocks, turf hummocks, circles, solifluction lobes, and peat mounds are surface evidence of cryoturbation in the underlying soil. Microrelief features associated with cryoturbation were described in the section "Topography."

Permafrost and Soil Formation

Permafrost consists of soil or geologic material that is continuously at or below 0 degrees C (National Research Council of Canada, 1988). Permafrost, though not considered a soil or landscape process, has a unique set of associated properties and processes. Permafrost as a landscape feature is a good example of the climate factor of soil formation. Permafrost is extensive on plains and more gently sloping mountainsides throughout the survey area. Permafrost in soils commonly occurs as fine ice crystals between individual soil grains with occasional seams and lenses. The overall ice content ranges from about 60 to 70 percent, by volume. The ice content of the ice wedge polygons is estimated to be 80 percent or more, by volume, in the soil component D31—Alpine tussock-scrub silty polygons, frozen soils, of the Alpine

Rounded Mountains with Extensive Permafrost detailed soil map unit. Disturbance of the surface organic mat of permafrost soils on slopes of 10 percent or more commonly results in melting of the permafrost and slope failure as the soils liquefy and flow downslope. Slope failure associated with melting permafrost as a result of natural disturbance has been observed in areas of the Boreal Hills with Extensive Permafrost detailed soil map unit.

Permafrost is absent on flood plains because of hydrologic factors. Formation of permafrost in soils on uplands requires the presence of a loamy or finer textured material with relatively low rock fragment content and low thermal conductivity properties. Thermal conductivity values indicate how rapidly heat is conducted through soil. These values are relatively low in moist organic material and moist mineral soils that are made up of loamy or finer textured material (Jury and others, 1991). Low conductivity results in slow warming of the soils and overall low summer soil temperatures, conditions favorable for the formation of permafrost. Soils that formed in gravelly alluvium on flood plains and colluvium on mountains have higher thermal conductivity. Heat is transferred from the atmosphere in summer, resulting in rapid warming of the soils and relatively high summer soil temperatures, conditions unfavorable for the formation of permafrost.

Wildfires are common in the boreal and lowland areas of interior Alaska, impacting areas with and without permafrost. The most widespread impact of wildfires, however, is in areas underlain by permafrost. The short-term impact following most wildfires is increased soil temperature, resulting in an increase in the thickness of the active layer, or the surface layer that thaws in summer. As near-surface permafrost thaws, a large volume of water is released and either accumulates in depressions or runs off through surface or subsurface drainage outlets. Differential subsidence of the soil surface and slumping on steeper slopes can occur, depending on the ice content of the permafrost and the rate of thawing. Gradually, in the absence of additional fires or other disturbances, the moss organic layer reestablishes and the permafrost returns to the pre-fire condition (Foote, 1976; Viereck, 1973). Return to the pre-burn state depends in part on the depth of the organic layer consumed by the fire, the rate of revegetation (Viereck and Dyrness, 1979), and the soil texture. The pre-burn state returns as post-fire vegetation succession progresses and the organic mat reestablishes. Dyrness (Dyrness, 1982) reported that 4 years after a burn in an area of black spruce community, the thickness of the active layer increased three-fold in areas where one-half of the organic mat was consumed by the fire and five-fold in areas where the entire surface was consumed and mineral soil was exposed. Foote (Foote, 1976) and Viereck (Viereck, 1973) agree that in black spruce communities, the forest canopy, forest floor, and thickness of the active layer return to their original state within 50 to 70 years following fire. Based on observation of the tree core in the survey area, similar return intervals of the thickness of the organic mat are expected on soils that formed in thick deposits of loess. In this survey area, however, a return interval of 100 to 150 years is estimated for the soils on terraces that have a loamy alluvium surface mantle 50 centimeters thick or more and overly sand and gravel. The higher thermal conductivity properties of this coarser textured material are attributed to the warmer soil temperatures and a longer return interval of the thickness of the organic mat. Charcoal in the soil profile and establishment of aspen and/or birch plant communities indicate a history of wildfire, a significant disturbance in the survey area.

Specific soil processes are associated with each part of a fire cycle. The accumulation of basic soil metals and nutrients, such as calcium, magnesium, potassium, sodium, and nitrates in surface layers originates from the ash residue left behind after fire. The ash layer typically effervesces when dilute hydrochloric acid is added. This reaction commonly can be observed in the remaining surface organic material for a year or more following a fire. Associated with this effervescence is soil reaction (pH) of 8 to 8.2. Other changes in nutrient status following fire, such as

increased content of phosphorus and nitrates, commonly are related to the increase in pH (Heilman, 1966). Heilman reports that the removal by fire of moss layers that have low density and are low in content of nitrogen maximizes the content of nitrogen at the surface in soils. This restoration of the bulk of the soil nitrogen to the warmest portion of the soil profile explains the substantial improvement in productivity and availability of nitrogen following burning. Acidification is associated with the aerobic, well drained, permafrost-free portion of this cycle. As conditions become more acid and the organic mat becomes thicker, the rate of biological decomposition slows and litter and moss accumulate on the soil surface. Nutrients for plant growth become less available. Thickening of the organic mat affects nutrient cycling. Without a corresponding increase in the quantity of available nutrients in the lower part of the soil, the quantity of available nutrients in the organic mat and upper part of the soil is diluted as the organic mat becomes progressively thicker. As succession proceeds, elements that are at low levels and potentially limited, such as nitrogen, phosphorus, and potassium, are cycled by the vegetation and dispersed throughout the increasingly thick organic layer (Heilman, 1966 and 1968). This gradual thickening of the surface organic mat is accompanied by a lowering of the temperature in the underlying soil. In areas that have a mantle of loamy alluvial material 51 centimeters thick or more, permafrost may begin to form as a result of the low thermal conductivity properties associated with the loamy mantle.

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Glossary

- Acidification (process).** A subprocess of braunification in which excess basic metal cations are removed from the soil profile by leaching or plant use. Acidification is normally accompanied by a lowering in soil reaction (pH).
- Active layer.** The top layer of ground subject to annual thawing and freezing in areas underlain by permafrost.
- Aerobic.** A condition in which molecular oxygen is in the soil.
- Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.
- Alluvial fan.** A body of alluvium, with overflow of water and debris flow deposits, whose surface forms a segment of a cone that radiates downslope from the point where the stream emerges from a narrow valley onto a less sloping surface. Source uplands range in relief and areal extent from mountains to gullied terrains on hillslopes.
- Alluvium.** Material, such as sand, silt, or clay, deposited on land by streams.
- Alpine.** Land and related resources above the upper elevation limit of trees (treeline).
- Anaerobic.** A condition in which molecular oxygen is absent in the soil.
- Aspect.** The direction in which a slope faces. Also, the general physical appearance of a vegetation cover type.
- Association, soil.** A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.
- Available water capacity (available moisture capacity).** The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as centimeters of water per centimeter of soil. The capacity, in centimeters, in a 150-centimeter profile or to a limiting layer is expressed as:
- | | |
|-----------------|----------------|
| Very low | 0 to 7.6 |
| Low..... | 7.6 to 15.2 |
| Moderate | 15.2 to 22.9 |
| High..... | 22.9 to 30.5 |
| Very high | more than 30.5 |
- Basal area.** For trees, the area of the cross section of a single tree or of all trees in a stand, usually measured at breast height (see breast height), expressed as square feet per acre or square meters per hectare. For herbs and shrubs, the area or proportion of the ground surface covered by the stems of plants at about ground level, expressed as square feet per acre or square meters per hectare or as a percentage.
- Base saturation.** The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.
- Bedrock.** The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

- Biome.** A continental-scale ecosystem characterized by similarities in plant lifeforms and environment. Examples are boreal, subalpine, and alpine.
- Bog.** A peat-forming ecosystem influenced solely by water, which falls directly onto it as rain or snow. Bog vegetation is dominantly herbs, shrubs, and stunted trees. *Sphagnum spp.* commonly is dominant in the moss layer.
- Boreal.** The biome of North America that stretches from Alaska and the Rocky Mountains eastward to the Atlantic Ocean. It is bounded by the treeline to the north and by aspen parkland to the south, which is a transition zone to the prairie grassland. The boreal biome supports dominantly forest vegetation.
- Braunification (process).** Release of iron from primary minerals in soil by hydration or oxidation, giving the soil a yellowish, brownish, or reddish brown color.
- Breast height.** A standard height for measurement of tree diameter and age, or 1.5 meters above the average ground level.
- Calcareous soil.** A soil that contains enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.
- Canopy.** The cover of leaves and branches formed by the tops or crowns of plants as viewed from above.
- Canopy cover.** The proportion of the ground area covered by the vertical projections of the canopy, express as a percentage.
- Cation.** An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.
- Cation-exchange capacity.** The total amount of exchangeable cations that can be held by the soil, expressed as milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise.
- Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.
- Coarse fragments.** Mineral or rock particles larger than 2 millimeters in diameter.
- Coarse textured soil.** Sand or loamy sand.
- Cobble (or cobblestone).** A rounded or partly rounded fragment of rock 7.6 to 25 centimeters in diameter.
- Codominant trees.** Trees whose crown forms the general level of the forest canopy and that receives full light from above but comparatively little from the sides.
- Colluviation (processes).** Processes associated with transportation and/or deposition by mass movement (direct gravitational action) and local, unconcentrated runoff on side slopes and/or at the base of slopes.
- Colluvium.** Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.
- Complex, soil.** A map unit with two or more soils or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.
- Consistence, soil.** The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:
Loose—Noncoherent when dry or moist; does not hold together in a mass.
Friable—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.
Firm—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.
Plastic—Readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.
Sticky—Adheres to other material and tends to stretch somewhat and pull apart rather than pull free from other material.

Hard—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft—When dry, breaks into powder or individual grains under very slight pressure.

Cemented—Hard; affected little by moistening.

Cover type. A unit of vegetation essentially similar in composition and development throughout its extent. Synonyms: community type, vegetation type.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Cryic. Soil temperature regime in which the mean annual soil temperature is 0 to 8 degrees C.

Cryoturbation (frost churning). The churning of soil material by frost action, resulting in disrupted or broken horizons, incorporation of material from other horizons, organic matter accumulation on the permafrost table, and oriented rock fragments.

Depth, soil. Generally, the thickness of the soil over bedrock. Very deep soils are more than 152 centimeters (60 inches) deep over bedrock; deep soils, 102 to 152 centimeters (40 to 60 inches); moderately deep, 51 to 102 centimeters (20 to 40 inches); shallow, 25 to 51 centimeters (10 to 20 inches); and very shallow, less than 25 centimeters (10 inches).

Diffusion. Movement from a zone of high concentration to one of lower concentration.

Dominant trees. Trees whose crown forms the general level of the forest canopy and receives full light from above and from the sides.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage. Altered drainage is commonly the result of artificial drainage or irrigation, but it may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained—Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically they are wet long enough that most mesophytic crops are affected. These soils commonly have a slowly pervious layer within or directly below the solum or periodically receive high rainfall, or both.

Somewhat poorly drained—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, have a high water table, receive additional water from seepage, receive nearly continuous rainfall, or a combination of these.

Poorly drained—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor

drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. In areas where rainfall is high and nearly continuous, they can have a moderate or high slope gradient.

Effervescence. A bubbling reaction upon addition of dilute hydrochloric acid.

Enrichment (process). A fluvial subprocess that includes the accumulation of bases such as calcium carbonate in the soil. The process includes fluvial deposits of base-rich material and concentration in the surface layer due to evaporation.

Ericaceous. Refers primarily to the Heath family, *Ericaceae* (for example, Labrador-tea), but usually includes the Crowberry family, *Empetraceae*.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic)—Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated)—Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature (for example, fire that exposes the surface).

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. The term is most often applied to cliffs resulting from differential erosion.

Esker. A narrow, winding ridge of stratified gravelly and sandy drift deposited by a stream flowing in a tunnel beneath a glacier.

Evapotranspiration. The combined loss of water from a given area and during a specific period of time by evaporation from the soil surface and by transpiration from plants.

Fibric soil material (peat). The least decomposed of all organic soil material. Peat contains a large amount of well-preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Fine textured soil. Sandy clay, silty clay, or clay.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is usually a constructional landform built of sediment deposited during overflow and lateral migration of the stream.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Fluvial (process). Processes including erosion, transportation, deposition, and enrichment of alluvium by water.

Footslope. The geomorphic component that forms the inner, gently inclined surface at the base of a hillslope. The surface profile is dominantly concave. In terms of gradational processes, a footslope is a transition zone between an upslope site of erosion (backslope) and a downslope site of deposition (toeslope).

Forb. Any herbaceous plant that is not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A unit of forest vegetation essentially similar in composition and development throughout its extent.

Frost boil. A small mound of fresh soil material formed by frost action. A type of nonsorted circle commonly in fine grained sediment underlain by permafrost.

- Genesis, soil.** The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.
- Geomorphic processes.** Natural processes that form the landscape and surficial sediment. For example, colluvial processes, deposition, and erosion.
- Glacial drift** (geology). Pulverized and other rock material transported by glacial ice and then deposited. Also, the sorted and unsorted material deposited by streams flowing from glaciers.
- Glacial outwash** (geology). Gravel, sand, and silt, commonly stratified, deposited by glacial meltwater.
- Glacial till** (geology). Unsorted, nonstratified glacial drift consisting of clay, silt, sand, and boulders transported and deposited by glacial ice.
- Glaciated uplands.** Land areas that were previously covered by continental or alpine glaciers and that are at a higher elevation than the flood plain.
- Glaciofluvial deposits** (geology). Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur as kames, eskers, deltas, and outwash plains.
- Glaciolacustrine deposits.** Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are interbedded or laminated.
- Gleyed soil.** Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.
- Gravel.** Rounded or angular fragments of rock as much as 7.6 centimeters in diameter. An individual piece is a pebble.
- Gravelly soil material.** Material that is 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 7.6 centimeters in diameter.
- Ground water** (geology). Water filling all the unblocked pores of underlying material below the water table.
- Hard bedrock.** Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.
- Hemic soil material (mucky peat).** Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.
- Herb.** Grasses, sedges, forbs, and any other non-woody herbaceous plants.
- Hill.** A natural elevation of the land surface, rising as much as 305 meters above surrounding lowlands, commonly of limited summit area and having a well-defined outline. Hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.
- Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. The major horizons of mineral soil are as follows:
- O horizon*—An organic layer of fresh and decaying plant residue.
- A horizon*—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.
- B horizon*—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as accumulation of clay, sesquioxides, humus, or a combination of these; prismatic or blocky structure; redder or browner colors than those of the A horizon; or a combination of these.
- E horizon*—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

C horizon—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material differs from that in the solum, the number 2 precedes the letter C.

Cr horizon—Sedimentary beds of consolidated sandstone and semiconsolidated and consolidated shale. Generally, roots can penetrate this horizon only along fracture planes.

R layer—Hard, consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon but can be directly below an A or B horizon.

Hummock. A rounded or conical mound or other small elevation. Also, a slight rise of ground above a level surface.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The main consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. Group A soils have a high infiltration rate when thoroughly wet and have a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. Group D soils, at the other extreme, have a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Hydromorphism (process). Soil processes associated with saturated conditions, including accumulation of organic material and formation of redoximorphic features (gray and red soil mottles caused by saturation or alternating saturated and unsaturated conditions in soils).

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in centimeters per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate and then the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in centimeters per hour, is expressed as follows:

| | |
|---------------------|-----------------|
| Less than 0.5 | very low |
| 0.5 to 1.0 | low |
| 1.0 to 1.9 | moderately low |
| 1.9 to 3.2 | moderate |
| 3.2 to 4.4 | moderately high |
| 4.4 to 6.4 | high |
| More than 6.4 | very high |

Interior (Alaska). Physiographic area north of the summit of the Alaska Range and south of the summit of the Brooks Range that has a dominantly continental climate.

Interstitial (ice crystals). Ice formation in voids between soil particles.

K_{sat} Saturated hydraulic conductivity. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the *Soil Survey Manual*. In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." The conversion of K_{sat} rates to "permeability" rates is shown below:

SATURATED HYDRAULIC CONDUCTIVITY - PERMEABILITY

| K_{sat} Class | | Permeability Class | |
|------------------------------|--------|---------------------------|--------|
| 705.00 | 100.00 | 705.00 | 100.00 |
| VERY HIGH | | VERY RAPID | |
| | | 141.14 | 20.00 |
| HIGH | | RAPID | |
| | | 42.34 | 6.00 |
| MODERATELY HIGH | | MODERATELY RAPID | |
| | | 14.11 | 2.00 |
| MODERATELY LOW | | MODERATE | |
| | | 4.23 | 0.60 |
| LOW | | MODERATELY SLOW | |
| | | 1.41 | 0.20 |
| VERY LOW | | SLOW | |
| | | 0.42 | 0.06 |
| | | VERY SLOW | |
| | | 0.01 | 0.0015 |
| | | IMPERMEABLE | |
| | | 0.00 | 0.00 |
| μm/sec | in/hr | μm/sec | in/hr |
| μm/sec x 0.1417 = in/hr | | in/hr x 7.0572 = μm/sec | |

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Leaching. The removal of soluble material from soil or other material by percolating water.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loamy soil. Coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, silt, clay loam, sandy clay loam, or silty clay loam.

Loess. Fine grained material, consisting dominantly of silt-sized particles, deposited by wind.

Maritime-continental (climate). A blend of two climate types in which either the maritime or continental climate may be the dominant local weather for extended periods of time.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

- Metamorphic rock.** Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.
- Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.
- Minor component.** A component of limited extent that may or may not be present in any given area.
- Miscellaneous area.** An area that has little or no natural soil and supports little or no vegetation.
- Morphology, soil.** The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.
- Mottling, soil.** Irregular spots of different colors that vary in number and size. Descriptive terms for abundance are *few*, *common*, and *many*; for size are *fine*, *medium*, and *coarse*; and for contrast are *faint*, *distinct*, and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium*, 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse*, more than 15 millimeters (about 0.6 inch).
- Mountain.** A natural elevation of the land surface, rising more 305 meters above the surrounding lowlands, commonly of limited summit area and generally having steep sides (slopes of more than 25 percent) and considerable bare-rock surface. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are primarily formed by deep-seated earth movements or volcanic action and secondarily by differential erosion.
- Muck.** Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)
- Munsell notation.** A designation of color by three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.
- Neutral soil.** A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)
- Nutrient, plant.** Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.
- Observed rooting depth.** Depth to which roots have been observed to penetrate.
- Organic matter.** Plant and animal residue in the soil in various stages of decomposition.
- Outwash plain.** An extensive area of glaciofluvial material that was deposited by meltwater streams.
- Overstory.** The trees in a forest that form the upper canopy layer or layers.
- Oxbow.** The horseshoe-shaped channel of a former meander, remaining after the stream formed a cutoff across a narrow meander neck.
- Oxidation.** Combination with oxygen, addition of oxygen or other atom or group, or removal of hydrogen or other atom or group.
- Parent material.** The unconsolidated organic and mineral material in which soil forms.
- Peat.** Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture conditions. (See Fibric soil material.)
- Pedon.** The smallest volume that can be called "soil." A pedon is three-dimensional and large enough to permit study of all the horizons. Its area ranges from about 0.9 to 9.3 square meters, depending on the variability of the soil.
- Pergelic.** Soil temperature regime in which the mean annual soil temperature is below freezing or lower.
- Permafrost.** Layers of soil, or bedrock, in arctic or subarctic regions in which a temperature below freezing has existed continuously for 2 years or more.

Permafrost extent or distribution. The percentage of a map unit consisting of soils with permafrost.

Continuous—more than 80 percent of the composition of the map unit consists of soils with permafrost.

Discontinuous—20 to 80 percent of the map unit consists of soils with permafrost.

Sporadic—more than 5 percent but less than 20 percent of the map unit consists of soils with permafrost.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the *Soil Survey Manual*. In line with conventional usage in the engineering profession and with traditional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

| | |
|-----------------------|------------------------|
| Extremely slow..... | 0.0 to 0.01 inch |
| Very slow | 0.01 to 0.06 inch |
| Slow | 0.06 to 0.2 inch |
| Moderately slow..... | 0.2 to 0.6 inch |
| Moderate..... | 0.6 inch to 2.0 inches |
| Moderately rapid..... | 2.0 to 6.0 inches |
| Rapid | 6.0 to 20 inches |
| Very rapid | more than 20 inches |

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and thickness.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Physiochemical. Related to physical and chemical soil properties.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Podzolization (process). The removal and translocation of iron and aluminum from surface layers into underlying soil material. The soils typically have a gray, leached surface mineral layer a few centimeters thick underlain by a dark red layer of accumulated iron, aluminum, and organic compounds.

Ponding. Standing water on soils in closed depressions. Only percolation or evapotranspiration can remove the water.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Potential natural community. The assemblage of plants that most nearly achieves a long-term steady state of productivity, structure, and composition on a site. Synonyms: potential plant community, climax plant community, and plant association.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. A measure of acidity or alkalinity of a soil. A soil that has a pH of 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity, expressed as pH values, are:

| | |
|-----------------------------|----------------|
| Ultra acid | Below 3.5 |
| Extremely acid | 3.5 to 4.5 |
| Very strongly acid | 4.6 to 5.0 |
| Strongly acid | 5.1 to 5.5 |
| Moderately acid..... | 5.6 to 6.0 |
| Slightly acid | 6.1 to 6.5 |
| Neutral..... | 6.6 to 7.3 |
| Slightly alkaline | 7.4 to 7.8 |
| Moderately alkaline | 7.9 to 8.4 |
| Strongly alkaline..... | 8.5 to 9.0 |
| Very strongly alkaline..... | 9.1 and higher |

Redoximorphic concentrations. Bodies of apparent accumulation of iron-manganese oxides.

Redoximorphic depletions. Bodies of low chroma (≤ 1) having value of 4 or more where iron-manganese oxides alone have been stripped out or where both iron-manganese oxides and clay have been stripped out.

Redoximorphic features. Patches of contrasting colors and low chroma colors formed by the processes of reduction, translocation, and oxidation of iron and manganese oxides.

Regeneration. The new growth of a natural plant community, developing from seed.

Relief. The elevations, or inequalities, of a land surface, considered collectively.

Riparian (or riparian zone). Land in close proximity to a watercourse, lake, or spring and influenced by surface water and groundwater during all or part of the year.

Riverine. Associated with a river system; active river channel and land adjacent to the river that is inundated when stream discharge exceeds channel capacity.

Riverwash. Unstable areas of sandy, silty, clayey, or gravelly sediment. These areas are flooded, washed, and reworked by rivers so frequently that they support little or no vegetation.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more. For example, pebbles, cobbles, stones, and boulders.

Rock outcrop. Exposures of bare bedrock other than lava flows and rock-lined pits.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Representative value (RV). Used in the map unit descriptions to designate a representative value of the composition of each major component within a map unit. This value is expressed as a percentage.

Sand. As a soil separate, individual rock or mineral fragments 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandy soil. Sand or loamy sand.

Sapric soil material (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturation. Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scrub type. A unit of scrub vegetation essentially similar in composition and development throughout its extent.

- Shoulder slope.** The uppermost inclined surface at the top of a hillside. It is the transition zone from the backslope to the summit of a hill or mountain. The surface is dominantly convex in profile and erosional in origin.
- Shrink-swell.** The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.
- Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.
- Similar soils.** Soils that have similar limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.
- Slope.** The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by the horizontal distance and then multiplied by 100. Thus, a slope of 20 percent is a drop of about 6 meters in 30.5 meters of horizontal distance. In this survey, classes for simple slopes are as follows:
- | | |
|--------------------------|----------------------|
| Nearly level | 0 to 2 percent |
| Gently sloping | 2 to 4 percent |
| Moderately sloping | 4 to 8 percent |
| Strongly sloping | 8 to 15 percent |
| Moderately steep | 15 to 25 percent |
| Steep | 25 to 45 percent |
| Very steep | more than 45 percent |
- Soil.** A natural, three-dimensional body at the earth's surface that is capable of supporting plants. It has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over time.
- Soil group.** A collection of soils that formed under the influence of similar soil and geomorphic processes and have similar chemical and physical properties.
- Soil process.** A physical or chemical change in soil brought about by exterior influences.
- Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:
- | | |
|-----------------------|-----------------|
| Very coarse sand..... | 2.0 to 1.0 |
| Coarse sand..... | 1.0 to 0.5 |
| Medium sand..... | 0.5 to 0.25 |
| Fine sand..... | 0.25 to 0.10 |
| Very fine sand..... | 0.10 to 0.05 |
| Silt..... | 0.05 to 0.002 |
| Clay..... | less than 0.002 |
- Solum.** The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. Living roots and plant and animal activity are largely confined to the solum.
- Species.** A single, distinct kind of plant or animal having certain distinguishing characteristics.
- Stone line.** A concentration of coarse fragments in a soil. Generally, it is indicative of an old weathered surface. In a cross section, the line may be 1 fragment thick or

more. It generally overlies material that weathered in place and is overlain by recent sediment of variable thickness.

Stones. Rock fragments 25 to 60 centimeters (10 to 24 inches) in diameter if rounded or 38 to 60 centimeters (15 to 24 inches) in length if flat.

Stream channel. The hollow bed where a natural stream of surface water flows or may flow; the deepest or central part of the bed, formed by the main current and covered more or less continuously by water.

Stream terrace. One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel. It originally formed near the level of the stream and is the dissected remnant of an abandoned flood plain, streambed, or valley floor that was produced during a former stage of erosion or deposition.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are *platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grain* (each grain by itself, as in dune sand) or *massive* (the particles adhere without any regular cleavage, as in many hardpans).

Subalpine. The biome between the boreal and alpine biomes that consists of alder scrub.

Subarctic continental. The climate of interior Alaska that consists of long, cold winters and short, warm summers.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Substratum. The part of the soil below the solum.

Subsurface layer. Any soil horizon (A, E, AB, or EB) below the surface layer.

Summit. A general term for the top, or highest level, of an upland feature, such as a hill or mountain. It commonly refers to a higher area that has a gentle slope and is flanked by steeper slopes.

Surface layer. The part of the soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 10 to 25 centimeters (4 to 10 inches). Frequently designated as the "plow layer," or the "Ap horizon."

Surface soil. The A, E, AB, and EB horizons. It includes all subdivisions of these horizons.

Taiga. A Russian term meaning "land of little sticks" that is applied to the dwarf or stunted open conifer woodland and forests that are typically underlain by permafrost.

Talus. Rock fragments of any size or shape, commonly coarse and angular, derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose, broken rock formed mainly by falling, rolling, or sliding.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand*, *loamy sand*, *sandy loam*, *loam*, *silt loam*, *silt*, *sandy clay loam*, *clay loam*, *silty clay loam*, *sandy clay*, *silty clay*, and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by the terms "coarse," "fine," or "very fine."

Thermal conductivity. A measure of heat transfer through soil.

Thermokarst. Subsidence of the ground surface due to melting of ice masses.

Till plain. An extensive, nearly level to gently rolling or moderately sloping area that is underlain by or consists of till and that has slope of 0 to 8 percent.

Toeslope. The outermost inclined surface at the base of a hill. Toeslopes are commonly are gently sloping and linear in profile.

Tussock. A pedestal or rounded mound or other small elevation consisting of sedges and sedge detritus.

Understory. Any plants in a forest or scrub community that grow below the tree or shrub overstory and are partially shaded by the overstory.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowland along streams.

Valley. An elongated depressional area primarily developed by stream action.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than a result of poor drainage.

Plates

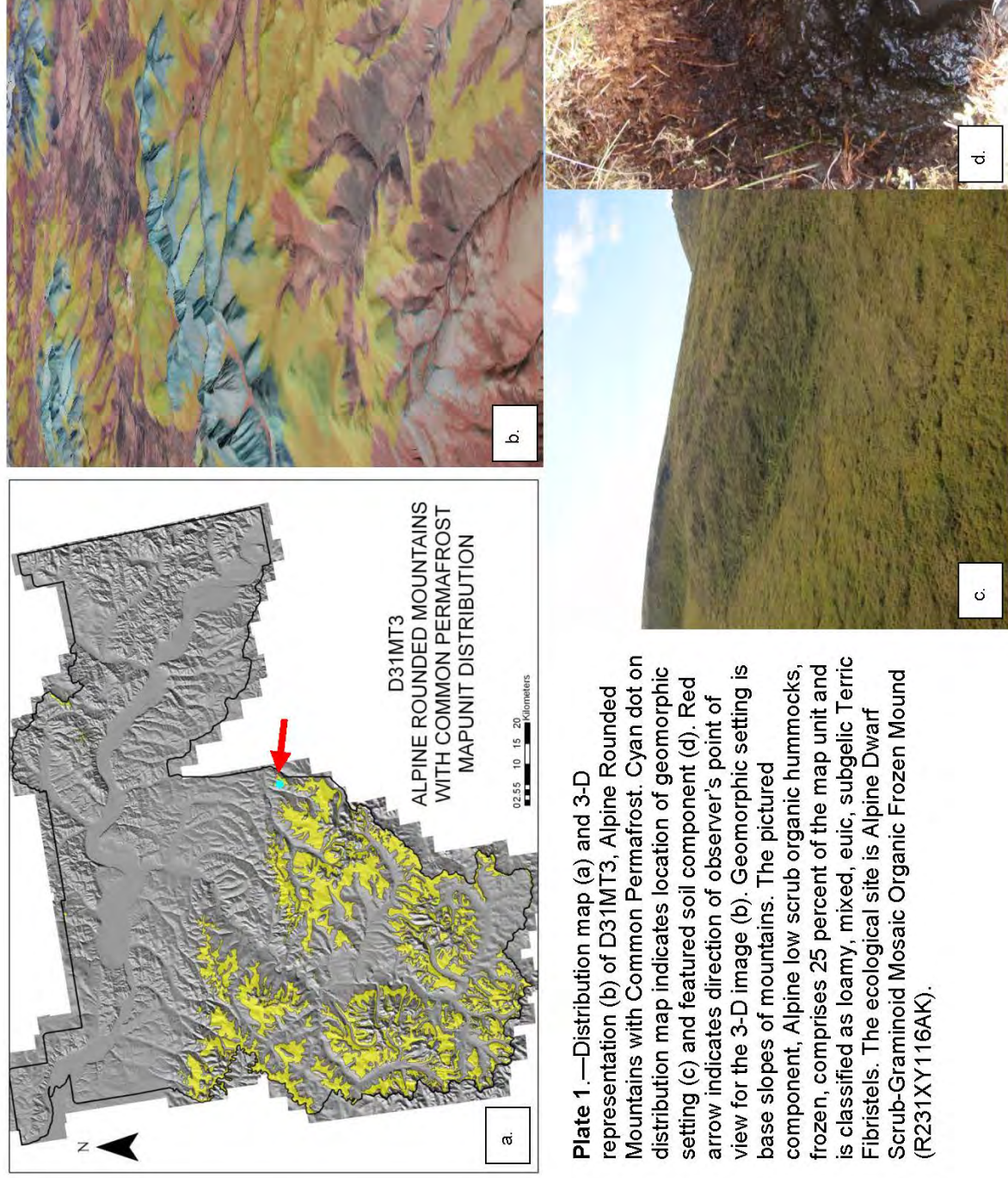


Plate 1.—Distribution map (a) and 3-D representation (b) of D31MT3, Alpine Rounded Mountains with Common Permafrost. Cyan dot on distribution map indicates location of geomorphic setting (c) and featured soil component (d). Red arrow indicates direction of observer's point of view for the 3-D image (b). Geomorphic setting is base slopes of mountains. The pictured component, Alpine low scrub organic hummocks, frozen, comprises 25 percent of the map unit and is classified as loamy, mixed, euic, subgelic Terric Fibristels. The ecological site is Alpine Dwarf Scrub-Graminoid Mosaic Organic Frozen Mound (R231XY116AK).

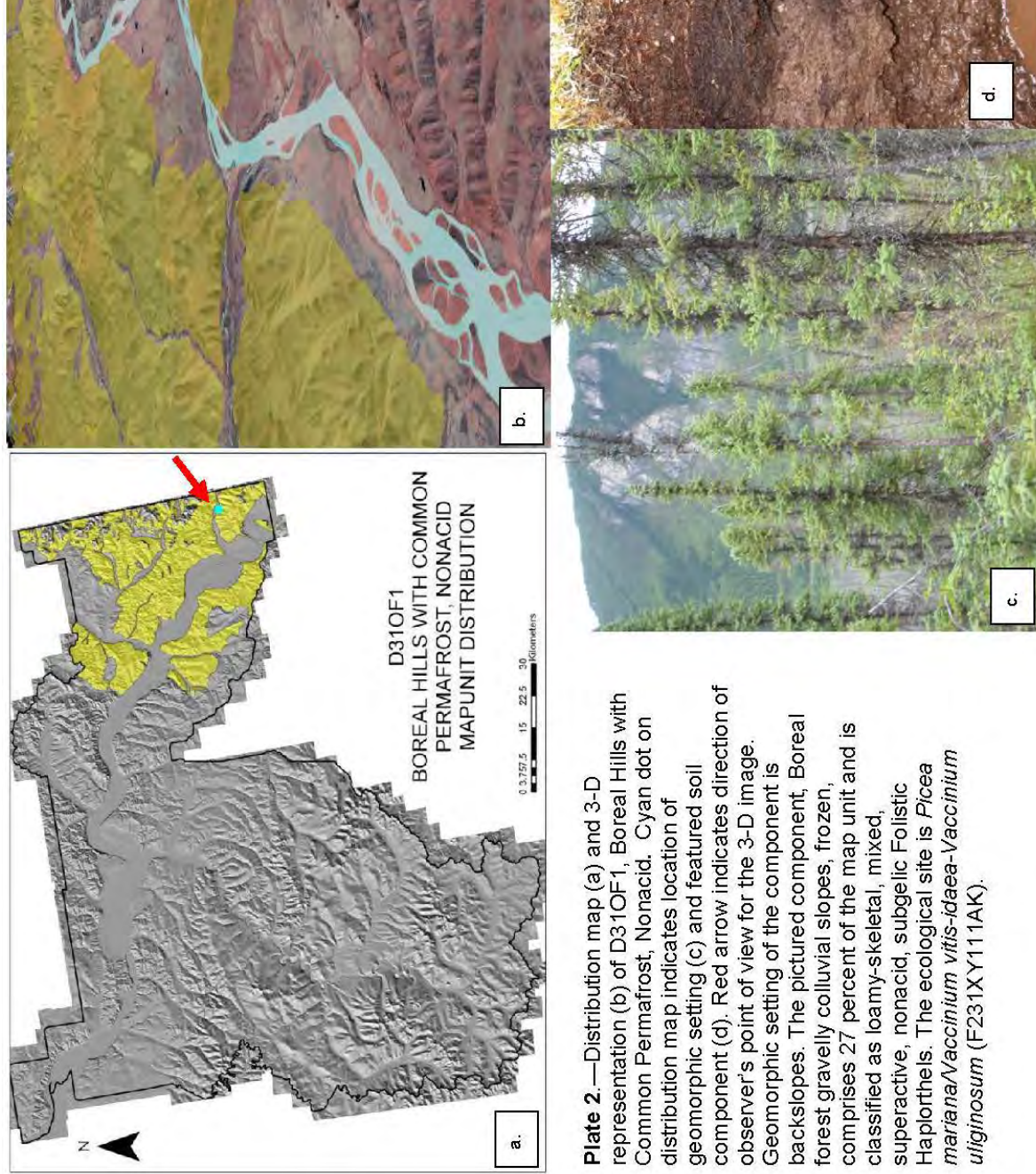
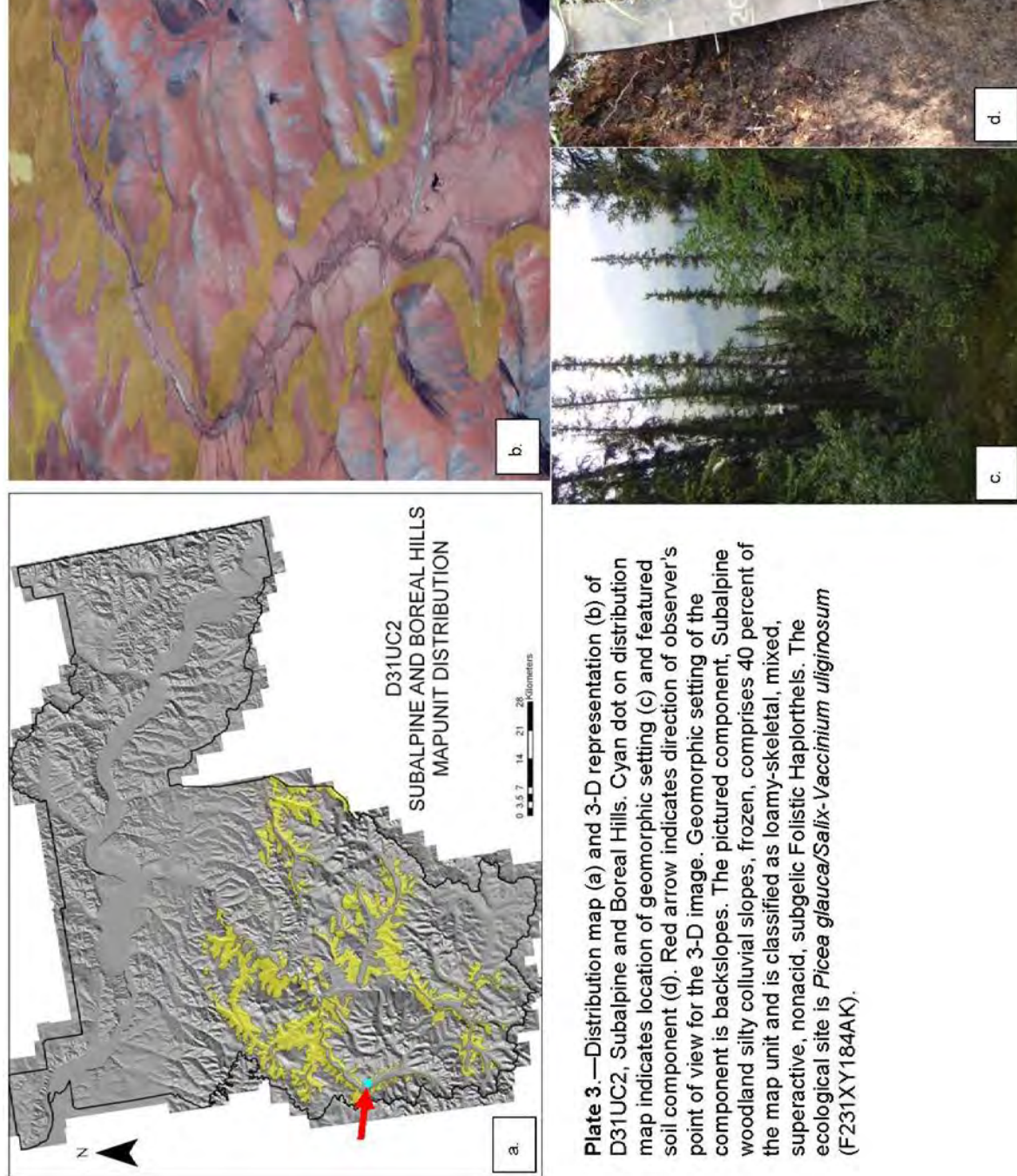


Plate 2.—Distribution map (a) and 3-D representation (b) of D31OF1, Boreal Hills with Common Permafrost, Nonacid. Cyan dot on distribution map indicates location of geomorphic setting (c) and featured soil component (d). Red arrow indicates direction of observer's point of view for the 3-D image. Geomorphic setting of the component is backslopes. The pictured component, Boreal forest gravelly colluvial slopes, frozen, comprises 27 percent of the map unit and is classified as loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels. The ecological site is *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum* (F231XY11 1AK).



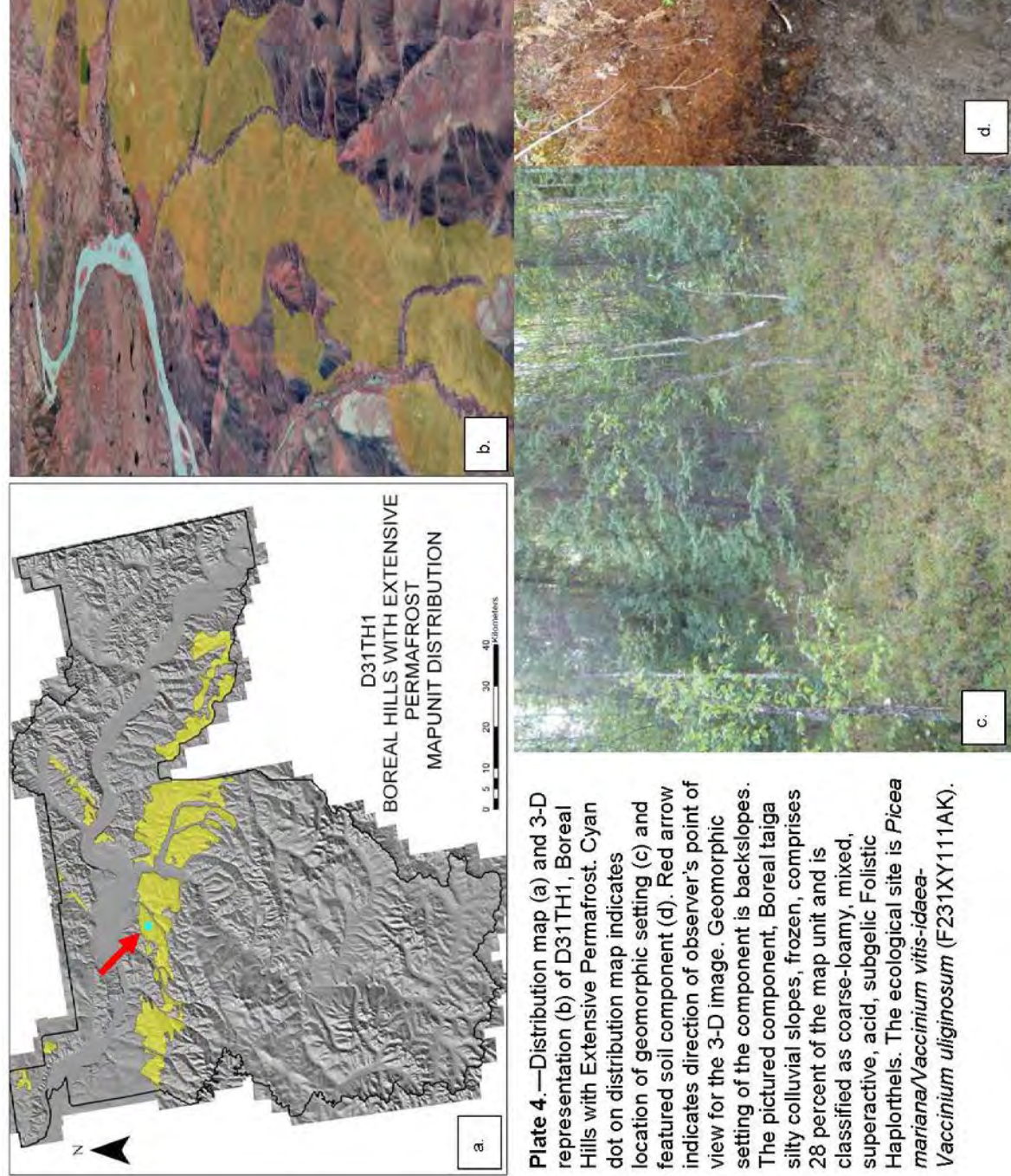


Plate 4.—Distribution map (a) and 3-D representation (b) of D31TH1, Boreal Hills with Extensive Permafrost. Cyan dot on distribution map indicates location of geomorphic setting (c) and featured soil component (d). Red arrow indicates direction of observer's point of view for the 3-D image. Geomorphic setting of the component is backslopes. The pictured component, Boreal taiga silty colluvial slopes, frozen, comprises 28 percent of the map unit and is classified as coarse-loamy, mixed, superactive, acid, subgelic Folistic Haploorthels. The ecological site is *Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum* (F231XY111AK).

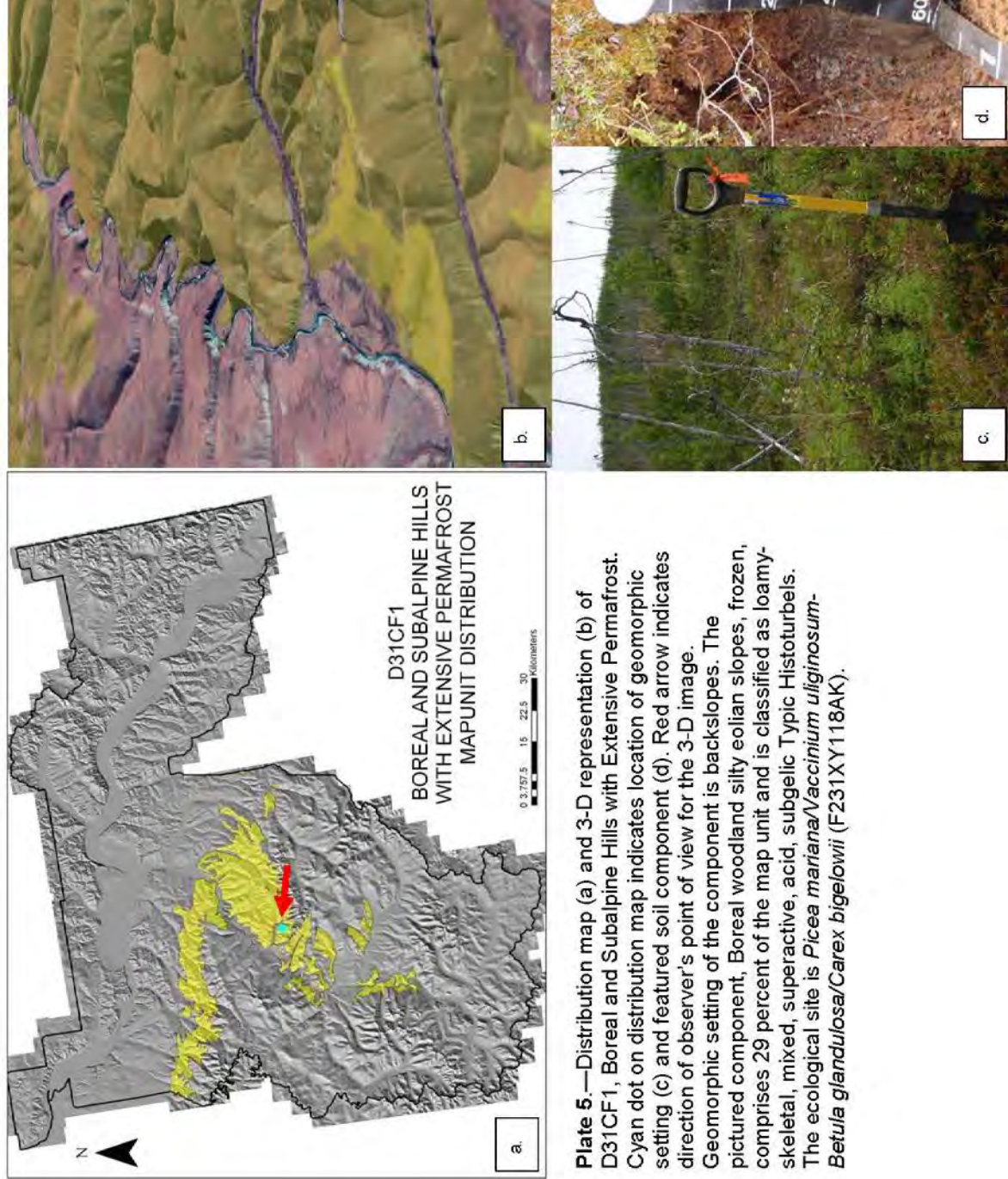


Plate 5.—Distribution map (a) and 3-D representation (b) of D31CF1, Boreal and Subalpine Hills with Extensive Permafrost. Cyan dot on distribution map indicates location of geomorphic setting (c) and featured soil component (d). Red arrow indicates direction of observer's point of view for the 3-D image. Geomorphic setting of the component is backslopes. The pictured component, Boreal woodland silty eolian slopes, frozen, comprises 29 percent of the map unit and is classified as loamy-skeletal, mixed, superactive, acid, subgelic Typic Histoturbels. The ecological site is *Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii* (F231XY118AK).

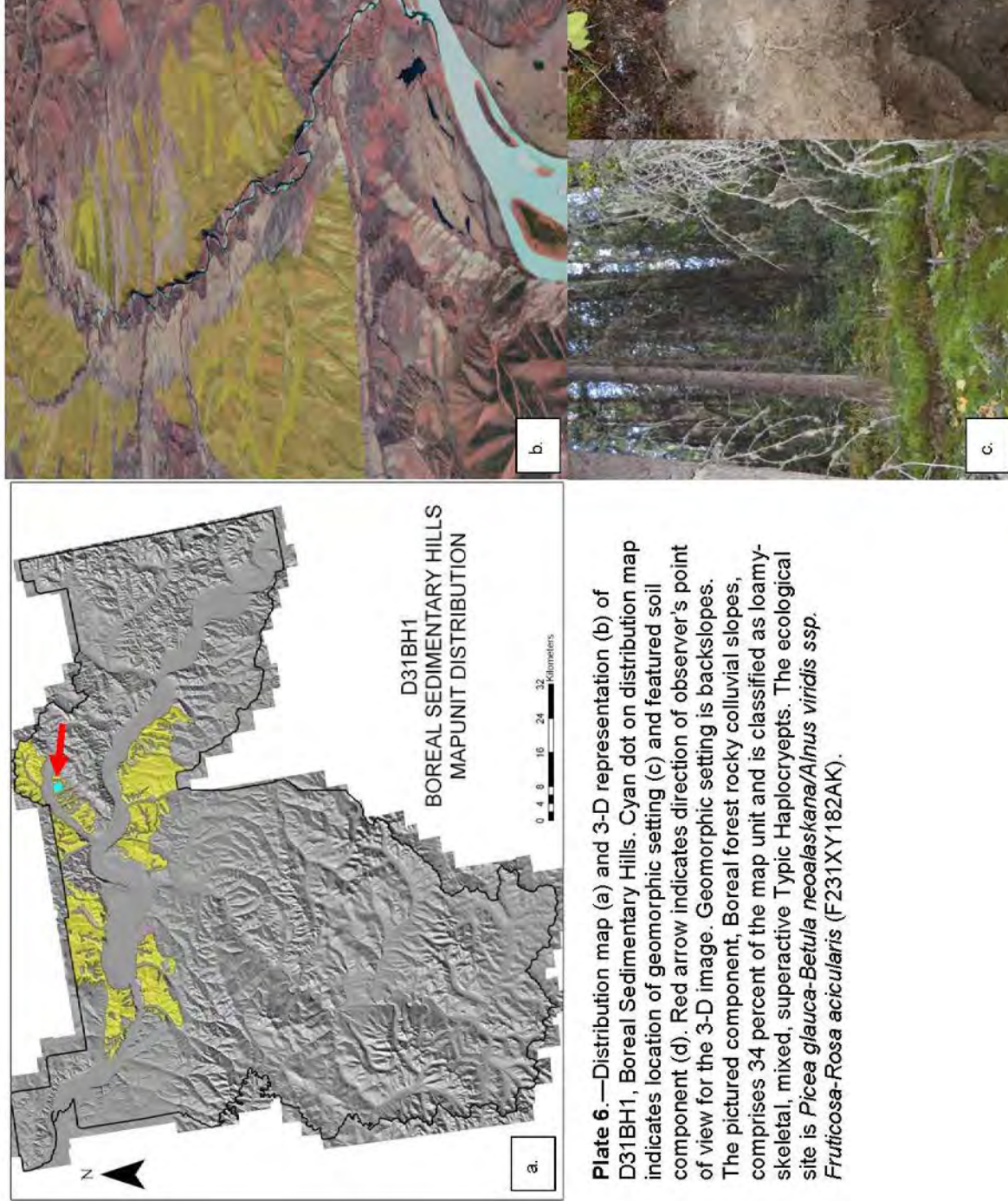


Plate 6.—Distribution map (a) and 3-D representation (b) of D31BH1, Boreal Sedimentary Hills. Cyan dot on distribution map indicates location of geomorphic setting (c) and featured soil component (d). Red arrow indicates direction of observer's point of view for the 3-D image. Geomorphic setting is backslopes. The pictured component, Boreal forest rocky colluvial slopes, comprises 34 percent of the map unit and is classified as loamy-skeletal, mixed, superactive Typic Haplocrypts. The ecological site is *Picea glauca-Betula neoalaskana/Alnus viridis ssp. Fruticosa-Rosa acicularis* (F231XY182AK).

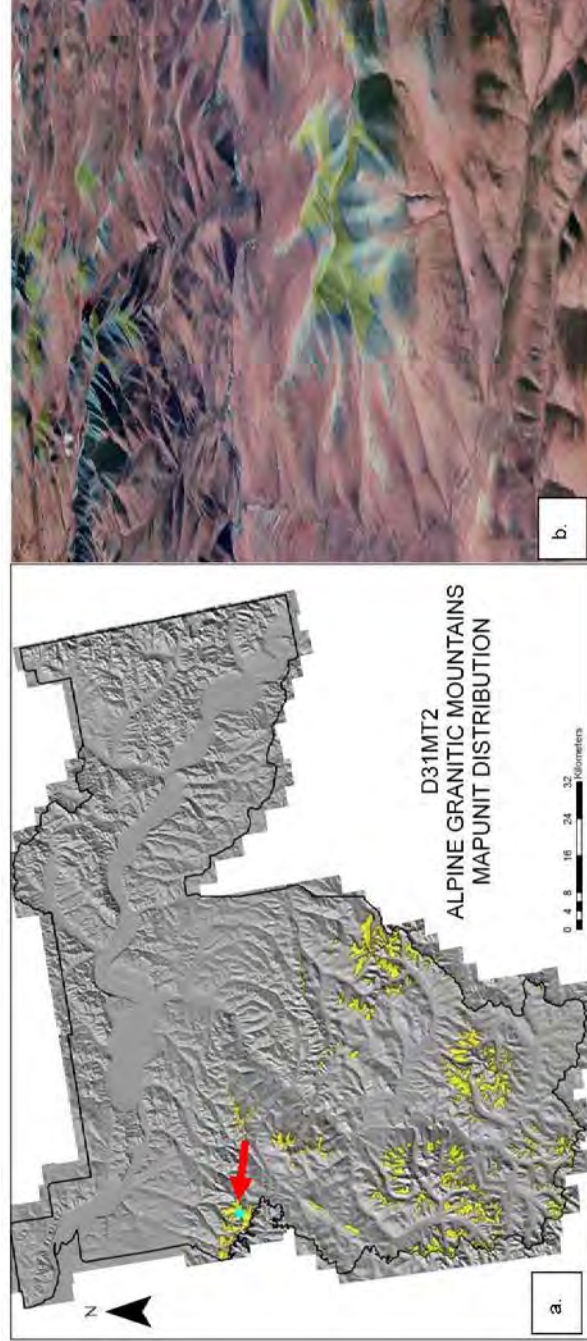


Plate 7.—Distribution map (a) and 3-D representation (b) of D31MT2, Alpine Granitic Mountains. Cyan dot on distribution map indicates location of geomorphic setting (c) and featured soil component (d). Red arrow indicates direction of observer's point of view for the 3-D image. Geomorphic setting for the component is mountain side slopes. The pictured component, Alpine low scrub gravelly colluvial slopes, comprises 32 percent of the map unit and is classified as loamy-skeletal, mixed, superactive, acid, subgelic Typic Haplogelepts. The ecological site is Alpine Dwarf Scrub-Lichen Mosaic Gravelly Circles, Steep (R231XY134AK).

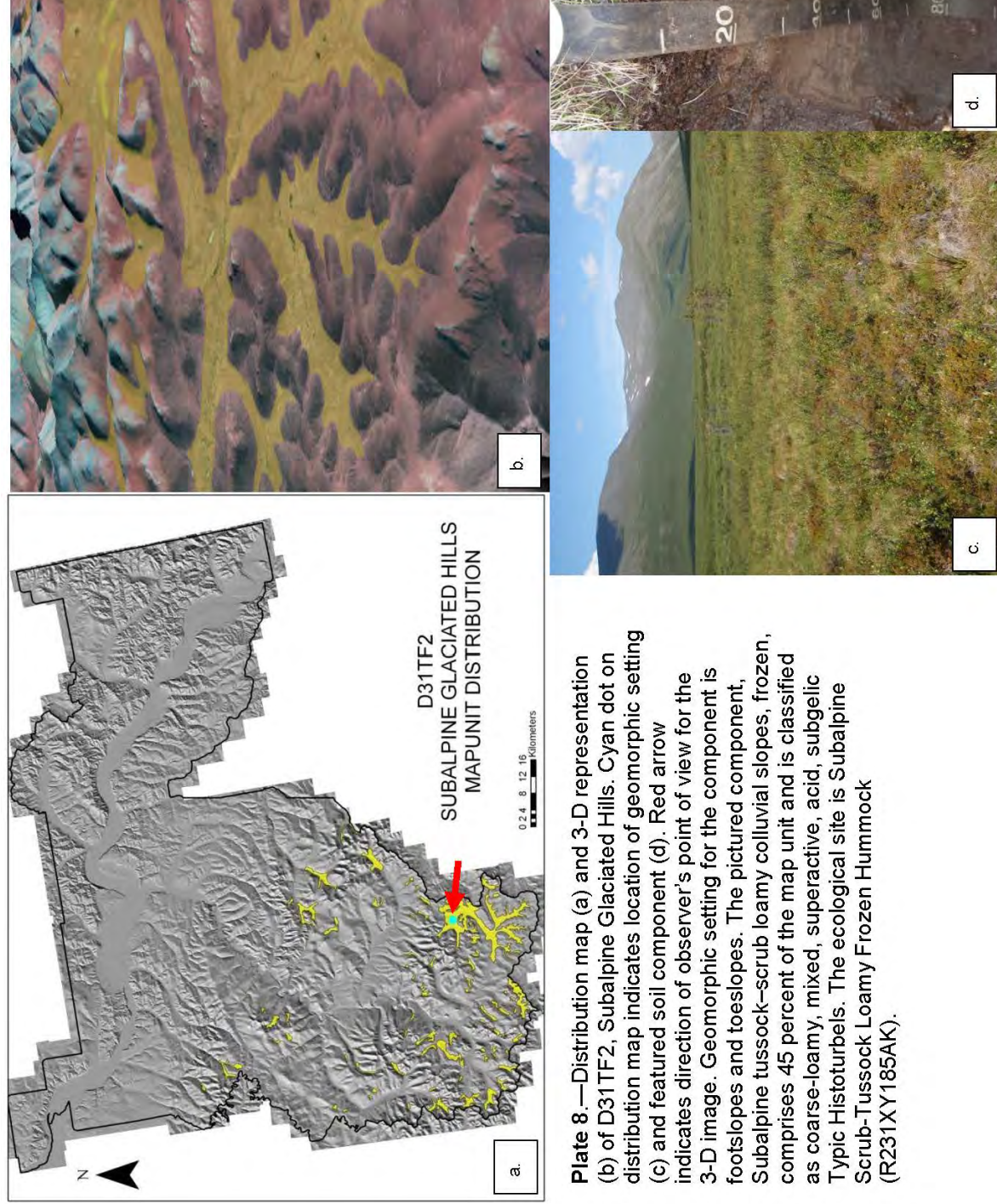


Plate 8.—Distribution map (a) and 3-D representation (b) of D31TF2, Subalpine Glaciated Hills. Cyan dot on distribution map indicates location of geomorphic setting (c) and featured soil component (d). Red arrow indicates direction of observer's point of view for the 3-D image. Geomorphic setting for the component is Subalpine tussock-scrub loamy colluvial slopes, frozen, comprises 45 percent of the map unit and is classified as coarse-loamy, mixed, superactive, acid, subgelic Typic Histoturbels. The ecological site is Subalpine Scrub-Tussock Loamy Frozen Hummock (R231XY185AK).

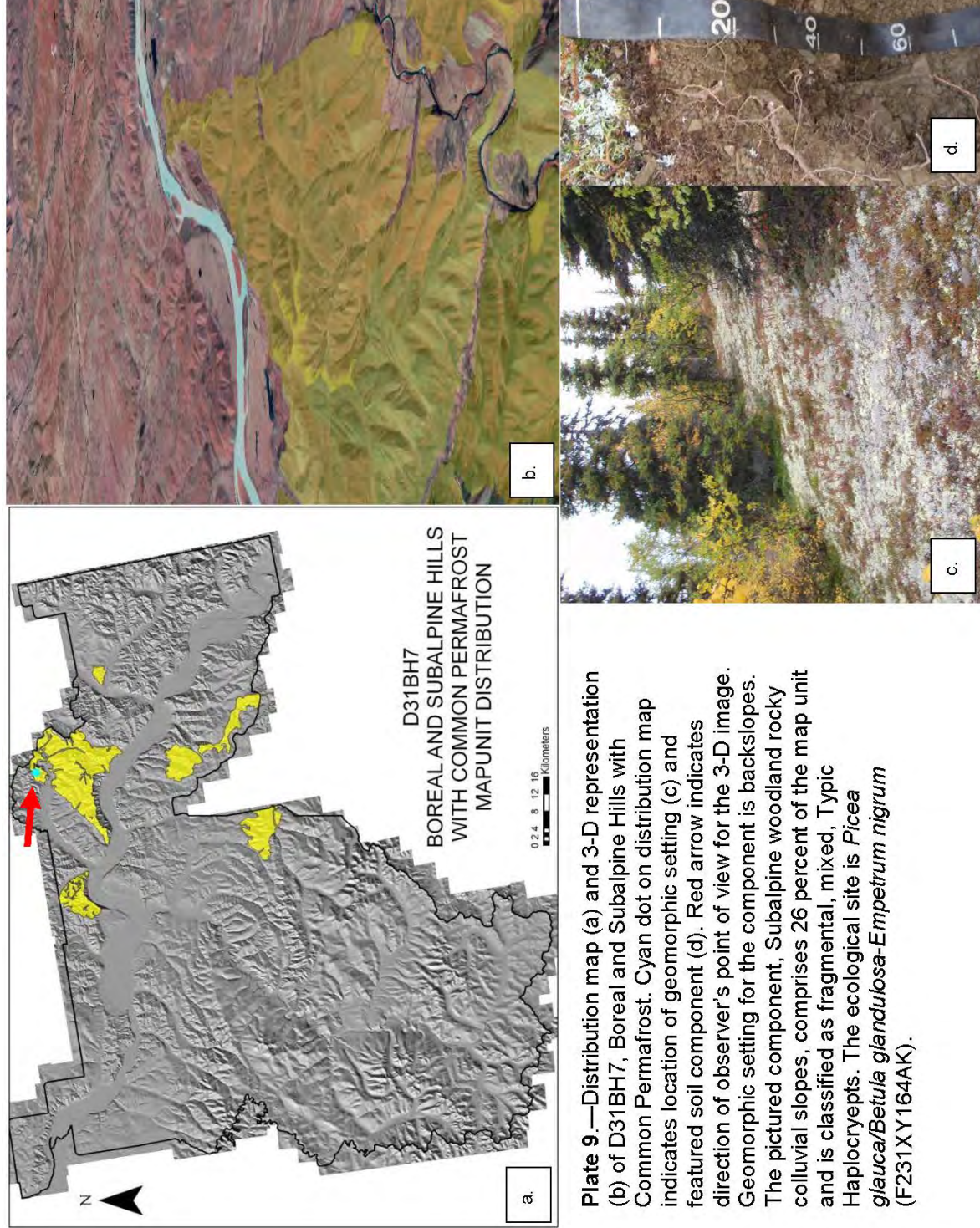


Plate 9.—Distribution map (a) and 3-D representation (b) of D31BH7, Boreal and Subalpine Hills with Common Permafrost. Cyan dot on distribution map indicates location of geomorphic setting (c) and featured soil component (d). Red arrow indicates direction of observer's point of view for the 3-D image. Geomorphic setting for the component is backslopes. The pictured component, Subalpine woodland rocky colluvial slopes, comprises 26 percent of the map unit and is classified as fragmental, mixed, Typical Haplodycrites. The ecological site is *Picea glauca/Betula glandulosa-Empetrum nigrum* (F231XY164AK).

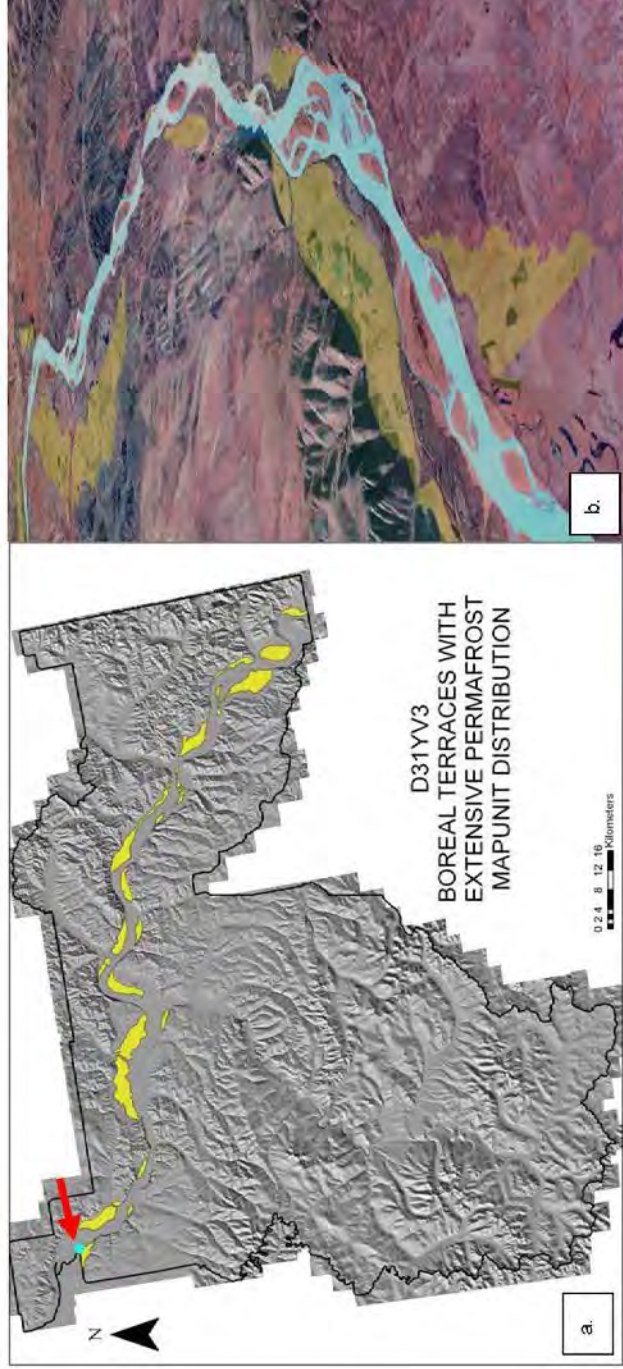


Plate 10.—Distribution map (a) and 3-D representation (b) of D31YV3, Boreal Terraces with Extensive Permafrost. Cyan dot on distribution map indicates location of geomorphic setting (c) and featured soil component (d). Red arrow indicates direction of observer's point of view for the 3-D image. Geomorphic setting is terraces. The pictured component, Boreal taiga/tussock organic terraces, frozen, comprises 90 percent of the map unit and is classified as loamy, mixed, eucic, subgelic Terric Fibristsels. The ecological site is *Picea mariana/Ledum palustre ssp. Decumbens/Empetrum nigrum* (F231XY169AK).

Tables

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 1.--Temperature and Precipitation

(Recorded in the period 1949 to 2011 at Eagle, Alaska;
Source: WRCC)

| Month | Temperature | | | Precipitation | Snow |
|-----------------|--------------------|--------------------|--------------|--------------------|--------------------|
| | Mean daily maximum | Mean daily minimum | Mean monthly | Mean monthly total | Mean monthly total |
| | <i>°F</i> | <i>°F</i> | <i>°F</i> | <i>In</i> | <i>In</i> |
| January---- | -3.7 | -21.3 | -12.5 | 0.52 | 0.00 |
| February--- | 5.3 | -16.9 | -5.7 | 0.43 | 0.02 |
| March----- | 21.9 | -8.1 | 6.9 | 0.34 | 0.86 |
| April----- | 42.2 | 14.2 | 28.2 | 0.31 | 9.52 |
| May----- | 59.2 | 31.9 | 45.6 | 0.97 | 10.95 |
| June----- | 70.9 | 43.8 | 57.4 | 1.69 | 11.20 |
| July----- | 72.9 | 47.1 | 60.0 | 2.28 | 7.64 |
| August----- | 66.8 | 41.1 | 54.0 | 1.97 | 6.87 |
| September-- | 53.8 | 30.7 | 42.2 | 1.24 | 5.16 |
| October---- | 32.3 | 15.1 | 23.7 | 0.94 | 3.12 |
| November--- | 11.4 | -5.0 | 3.2 | 0.69 | 0.78 |
| December--- | 1.4 | -15.6 | -7.1 | 0.69 | 0.00 |
| Mean yearly---- | 36.2 | 13.1 | 24.6 | 12.00 | 59.00 |
| Extreme---- | 97.0 | -71.0 | --- | 6.04 | 32.00 |
| | June 1950 | January 1952 | --- | July 2008 | December 1974 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 2.--Probability of Frost

(Recorded in the period 1961 to 1990 at Eagle, Alaska)

| Probability | Temperature | | |
|---|-------------------|-------------------|-------------------|
| | 24 °F or lower | 28 °F or lower | 32 °F or lower |
| Last freezing temperature in spring: | | | |
| 1 year in 10 later than-- | May 28 | June 16 | July 4 |
| 2 years in 10 later than-- | May 23 | June 8 | June 24 |
| 5 years in 10 later than-- | May 13 | May 24 | June 7 |
| First freezing temperature in fall: | | | |
| 1 year in 10 earlier than-- | August 24 | August 16 | August 8 |
| 2 years in 10 earlier than-- | August 30 | August 20 | August 12 |
| 5 years in 10 earlier than-- | September 11 | August 28 | August 19 |

Frost station: Eagle, Alaska (2607)

Start year--1961; end year--1990

Requested years of data: 30

Available years of data: 28

Spring--

Years of missing data: 24 degrees--9; 28 degrees--9; 32 degrees--8

Years with no occurrence: 24 degrees--0; 28 degrees--0; 32 degrees--0

Data years used: 24 degrees--21; 28 degrees--21; 32 degrees--22

Fall--

Years of missing data: 24 degrees--7; 28 degrees--7; 32 degrees--7

Years with no occurrence: 24 degrees--0; 28 degrees--0; 32 degrees--0

Data years used: 24 degrees--23; 28 degrees--23; 32 degrees--23

Table 3.--Ecoregions Heirarchy

| National Hierarchical Framework of Ecological Units ¹ | |
|--|---|
| Domain: Polar | |
| Division: Subarctic | |
| Province: Upper Yukon Tayga | |
| Section: Yukon-Old Crow Basin | |
| Subsection: <i>TL-Thanksgiving Loess Plain</i> | |
| Landtype Associations: | D32TL1-Boreal Eolian Plains with Common Permafrost |
| | D32TL2-Boreal Escarpments with Common Permafrost |
| | D32TL4-Boreal Eolian Plains with Extensive Permafrost |
| Province: Upper Yukon Tayga-Meadow | |
| Section: North Ogilvie Mountains | |
| Subsection: <i>BH-Biederman Hills</i> | |
| Landtype Associations: | D31BH1-Boreal Sedimentary Hills |
| | D31BH2-Boreal Dark Sedimentary Escarpments |
| | D31BH3-Boreal Hills with Common Permafrost |
| | D31BH5-Boreal Valley Bottoms |
| | D31BH6-Boreal Escarpments |
| | D31BH7-Boreal and Subalpine Hills with Common Permafrost |
| Subsection: <i>HL-Hard Luck Lowland</i> | |
| Landtype Associations: | D31HL1-Boreal Eolian Hills with Common Permafrost |
| | D31HL2-Boreal Eolian Hills with Extensive Permafrost |
| Subsection: <i>KT-Kandik Tableland</i> | |
| Landtype Associations: | D31KT1-Boreal Eolian Plains with Extensive Permafrost, Wet |
| Subsection: <i>LB-Little Black River Hills</i> | |
| Landtype Associations: | D31LB1-Boreal Hills with Common Permafrost, Thin Surface |
| | D31LB2-Boreal Hills with Common Permafrost, Steep |
| Subsection: <i>OF-Ogilvie Foothills</i> | |
| Landtype Associations: | D31OF1-Boreal Hills with Common Permafrost, Nonacid |
| Subsection: <i>OM-Ogilvie Lime/Dolostone Mountains</i> | |
| Landtype Associations: | D31OM1-Alpine Angular Mountains |
| | D31OM2-Alpine Lower Mountain Slopes |
| Subsection: <i>S-Snowy Domes</i> | |
| Landtype Associations: | D31SD1-Alpine Rounded Mountains with Extensive Permafrost |

Subsection: *TH-Tintina Hills*

Landtype Associations: D31TH1-Boreal Hills with Extensive Permafrost

Subsection: *YV-Yukon River Valley*

Landtype Associations: D31YV1-Boreal Flood Plains, Wet

D31YV2-Boreal Terraces
and Flood Plains with Common
Permafrost

D31YV3-Boreal Terraces with
Extensive Permafrost

D31YV3-Boreal Terraces with
Extensive Permafrost

D31YV8-Boreal Low Flood Plains

D31YV9-Boreal High Flood Plains

D31TE1-Boreal Eolian Terraces
with Extensive Permafrost

D31TE2-Boreal Terraces with
Extensive Permafrost, Wet

D31TL1-Boreal Eolian Plains with
Extensive Permafrost, Moist

Section: Yukon-Tanana Uplands

Subsection: *CF-Charley Foothills*

Landtype Associations: D31CF1-Boreal and Subalpine Hills
with Extensive Permafrost

Subsection: *MT-Upper Charley Mountain Tundra*

Landtype Associations: D31MT1-Alpine Granitic Mountains,
Dry

D31MT2-Alpine Granitic Mountains

D31MT3-Alpine Rounded Mountains
with Common Permafrost

D31WA1-Alpine and Subalpine Water

Subsection: *TF-Three Fingers Subalpine Basin*

Landtype Associations: D31TF1-Subalpine Hills

D31TF2-Subalpine Glaciated Hills

Subsection: *UC-Upper Charley Valleys*

Landtype Associations: D31UC1-Boreal Eolian Hills with
Common Permafrost, Wet

D31UC2-Subalpine and Boreal Hills

D31UC3-Boreal Plains with
Extensive Permafrost

D31UC4-Boreal Flood Plains with
Common Permafrost

D31UC5-Alpine Glaciated Mountains

¹Domain through Province level units based on *National Hierarchical Framework of Ecological Units* (Cleland and others, 1997). Sections based on *Ecoregions of Alaska* (Nowacki and others, 2001). Subsections based on *Ecological Subsections of Yukon-Charley Rivers National Preserve* (Swanson, 2001). Landtype associations are synonymous with detailed reconnaissance map units developed as part of this survey.

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 4.--Acreage/Hectarage and Proportionate Extent of the Soils

(An asterisk in the "Percent" column indicates less than 0.1 percent.)

| Map symbol | Map unit name | Acres | Hectares | Percent |
|---------------|--|-----------|-----------|---------|
| D31BH1 | Boreal Sedimentary Hills----- | 181,206 | 73,388 | 7.2 |
| D31BH2 | Boreal Dark Sedimentary Escarpments----- | 13,965 | 5,656 | 0.6 |
| D31BH3 | Boreal Hills with Common Permafrost----- | 17,324 | 7,016 | 0.7 |
| D31BH5 | Boreal Valley Bottoms----- | 32,359 | 13,105 | 1.3 |
| D31BH6 | Boreal Escarpments----- | 4,351 | 1,762 | 0.2 |
| D31BH7 | Boreal and Subalpine Hills with Common Permafrost----- | 104,524 | 42,332 | 4.1 |
| D31CF1 | Boreal and Subalpine Hills with Extensive Permafrost----- | 211,859 | 85,803 | 8.4 |
| D31HL1 | Boreal Eolian Hills with Common Permafrost----- | 13,089 | 5,301 | 0.5 |
| D31HL2 | Boreal Eolian Hills with Extensive Permafrost----- | 35,609 | 14,422 | 1.4 |
| D31KT1 | Boreal Eolian Plains with Extensive Permafrost, Wet----- | 9,630 | 3,900 | 0.4 |
| D31LB1 | Boreal Hills with Common Permafrost, Thin Surface----- | 36,636 | 14,838 | 1.5 |
| D31LB2 | Boreal Hills with Common Permafrost, Steep----- | 24,324 | 9,851 | 1.0 |
| D31MT1 | Alpine Granitic Mountains, Dry----- | 34,310 | 13,896 | 1.4 |
| D31MT2 | Alpine Granitic Mountains----- | 113,888 | 46,125 | 4.5 |
| D31MT3 | Alpine Rounded Mountains with Common Permafrost----- | 366,407 | 148,395 | 14.5 |
| D31OF1 | Boreal Hills with Common Permafrost, Nonacid----- | 287,839 | 116,575 | 11.4 |
| D31OM1 | Alpine Angular Mountains----- | 4,171 | 1,689 | 0.2 |
| D31OM2 | Alpine Lower Mountain Slopes----- | 17,183 | 6,959 | 0.7 |
| D31SD1 | Alpine Rounded Mountains with Extensive Permafrost----- | 2,662 | 1,078 | 0.1 |
| D31TE1 | Boreal Eolian Terraces with Extensive Permafrost----- | 26,474 | 10,722 | 1.0 |
| D31TE2 | Boreal Terraces with Extensive Permafrost, Wet----- | 22,944 | 9,292 | 0.9 |
| D31TF1 | Subalpine Hills----- | 48,179 | 19,512 | 1.9 |
| D31TF2 | Subalpine Glaciated Hills----- | 69,624 | 28,198 | 2.8 |
| D31TH1 | Boreal Hills with Extensive Permafrost----- | 204,599 | 82,863 | 8.1 |
| D31TL1 | Boreal Eolian Plains with Extensive Permafrost, Moist----- | 47,429 | 19,209 | 1.9 |
| D31UC1 | Boreal Eolian Hills with Common Permafrost, Wet----- | 52,603 | 21,304 | 2.1 |
| D31UC2 | Subalpine and Boreal Hills----- | 265,140 | 107,382 | 10.5 |
| D31UC3 | Boreal Plains with Extensive Permafrost----- | 20,004 | 8,102 | 0.8 |
| D31UC4 | Boreal Flood Plains with Common Permafrost----- | 28,566 | 11,569 | 1.1 |
| D31UC5 | Alpine Glaciated Mountains----- | 14,268 | 5,779 | 0.6 |
| D31WA1 | Alpine and Subalpine Water----- | 149 | 60 | * |
| D31YV1 | Boreal Flood Plains, Wet----- | 19,378 | 7,848 | 0.8 |
| D31YV2 | Boreal Terraces and Flood Plains with Common Permafrost----- | 19,381 | 7,849 | 0.8 |
| D31YV3 | Boreal Terraces with Extensive Permafrost----- | 59,772 | 24,208 | 2.4 |
| D31YV8 | Boreal Low Flood Plains----- | 43,891 | 17,776 | 1.7 |
| D31YV9 | Boreal High Flood Plains----- | 11,146 | 4,514 | 0.4 |
| D32TL1 | Boreal Eolian Plains with Common Permafrost----- | 34,456 | 13,955 | 1.4 |
| D32TL2 | Boreal Escarpments with Common Permafrost----- | 21,346 | 8,645 | 0.8 |
| D32TL4 | Boreal Eolian Plains with Extensive Permafrost----- | 2,824 | 1,144 | 0.1 |
| | Total----- | 2,523,509 | 1,022,021 | 100.0 |

* Less than 0.1 percent.

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|--|---|----------------------|--------------------|
| D31BH1: 34 percent; D31-Boreal forest rocky colluvial slopes----- | <i>Picea glauca</i> - <i>Betula neoalaskana</i> / <i>Alnus viridis</i> ssp. <i>fruticosa</i> - <i>Rosa acicularis</i> | Forestland | F231XY182AK |
| 24 percent; D31-Boreal forest rocky sedimentary colluvial slopes----- | <i>Picea glauca</i> - <i>Populus tremuloides</i> / <i>Shepherdia canadensis</i> - <i>Rosa acicularis</i> / <i>Mertensia paniculata</i> - <i>Geocaulon lividum</i> | Forestland | F231XY110AK |
| 17 percent; D31-Boreal taiga silty eolian slopes, frozen---- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea</i> - <i>Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 11 percent; D31-Boreal taiga silty colluvial slopes, frozen-- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea</i> - <i>Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 9 percent; D31-Boreal woodland silty eolian slopes, frozen---- | <i>Picea mariana</i> / <i>Vaccinium uliginosum</i> - <i>Betula glandulosa</i> / <i>Carex bigelowii</i> | Forestland | F231XY118AK |
| 5 percent; D31-Boreal taiga silty drainages, frozen----- | <i>Picea mariana</i> / <i>Salix</i> - <i>Ledum groenlandicum</i> | Forestland | F231XY193AK |
| D31BH2: 39 percent; D31-Boreal forest rocky sedimentary colluvial slopes----- | <i>Picea glauca</i> - <i>Populus tremuloides</i> / <i>Shepherdia canadensis</i> - <i>Rosa acicularis</i> / <i>Mertensia paniculata</i> - <i>Geocaulon lividum</i> | Forestland | F231XY110AK |
| 31 percent; D31-Boreal forest rocky colluvial escarpments---- | <i>Picea glauca</i> - <i>Populus tremuloides</i> / <i>Shepherdia canadensis</i> - <i>Rosa acicularis</i> / <i>Mertensia paniculata</i> - <i>Geocaulon lividum</i> | Forestland | F231XY110AK |
| 12 percent; D31-Boreal forest rocky colluvial slopes----- | <i>Picea glauca</i> - <i>Betula neoalaskana</i> / <i>Alnus viridis</i> ssp. <i>fruticosa</i> - <i>Rosa acicularis</i> | Forestland | F231XY182AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|---|----------------------|--------------------|
| D31BH2: 11 percent; D31-Boreal scrub rocky colluvial escarpments---- | Boreal Scrub Gravelly Slopes, Dry | Rangeland | R231XY109AK |
| 7 percent; D31-Boreal bedrock---- | Boreal Lichen Rock Outcrops Slopes | Rangeland | R231XY120AK |
| D31BH3: 59 percent; D31-Boreal taiga silty eolian slopes, frozen----- | <i>Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 33 percent; D31-Boreal taiga organic eolian slopes, frozen--- | <i>Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii</i> | Forestland | F231XY118AK |
| 8 percent; D31-Boreal woodland gravelly residual slopes----- | <i>Picea mariana-Betula neoalaskana/Vaccinium uliginosum/Cladonia</i> | Forestland | F231XY162AK |
| D31BH5: 36 percent; D31-Boreal taiga/tussock organic terraces, frozen----- | <i>Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum</i> | Forestland | F231XY169AK |
| 28 percent; D31-Boreal forest loamy high flood plains----- | <i>Picea glauca/Rosa acicularis/Lupinus arcticus</i> | Forestland | F231XY131AK |
| 19 percent; D31-Boreal scrub rocky drainages----- | Boreal Scrub Gravelly Drainages | Rangeland | R231XY195AK |
| 11 percent; D31-Boreal woodland rocky low flood plains----- | <i>Populus balsamifera/Salix alaxensis/Calamagrostis canadensis</i> | Forestland | F231XY130AK |
| 6 percent; D31-Boreal water, flowing----- | Boreal Water, Non-Vegetated | Rangeland | R231XY194AK |
| D31BH6: 56 percent; D31-Boreal forest gravelly colluvial escarpments-- | <i>Picea glauca/Rosa acicularis</i> | Forestland | F231XY181AK |
| 25 percent; D31-Boreal rubble land----- | Boreal Lichen Rock Outcrops Slopes | Rangeland | R231XY120AK |
| 10 percent; D31-Boreal forest loamy depressions, frozen----- | <i>Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|---|----------------------|--------------------|
| D31BH6: 9 percent; D31-Boreal taiga gravelly drainages----- | <i>Picea mariana</i> / <i>Alnus viridis</i> <i>ssp. fruticosa</i> / <i>Calamagrostis canadensis</i> | Forestland | F231XY192AK |
| D31BH7: 26 percent; D31-Subalpine woodland rocky colluvial slopes | <i>Picea glauca</i> / <i>Betula glandulosa</i> - <i>Empetrum nigrum</i> | Forestland | F231XY164AK |
| 24 percent; D31-Boreal forest rocky colluvial slopes----- | <i>Picea glauca</i> - <i>Betula neoalaskana</i> / <i>Alnus viridis ssp. fruticosa</i> - <i>Rosa acicularis</i> | Forestland | F231XY182AK |
| 20 percent; D31-Boreal forest gravelly colluvial slopes, frozen----- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea</i> - <i>Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 13 percent; D31-Boreal forest rocky sedimentary colluvial slopes----- | <i>Picea glauca</i> - <i>Populus tremuloides</i> / <i>Shepherdia canadensis</i> - <i>Rosa acicularis</i> / <i>Mertensia paniculata</i> - <i>Geocaulon lividum</i> | Forestland | F231XY110AK |
| 10 percent; D31-Boreal woodland silty eolian slopes, frozen---- | <i>Picea mariana</i> / <i>Vaccinium uliginosum</i> - <i>Betula glandulosa</i> / <i>Carex bigelowii</i> | Forestland | F231XY118AK |
| 7 percent; D31-Boreal scrub rocky drainages----- | Boreal Scrub Gravelly Drainages | Rangeland | R231XY195AK |
| D31CF1: 32 percent; D31-Boreal forest gravelly colluvial slopes, frozen----- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea</i> - <i>Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 29 percent; D31-Boreal woodland silty eolian slopes, frozen---- | <i>Picea mariana</i> / <i>Vaccinium uliginosum</i> - <i>Betula glandulosa</i> / <i>Carex bigelowii</i> | Forestland | F231XY118AK |
| 20 percent; D31-Subalpine woodland silty colluvial slopes, frozen----- | <i>Picea glauca</i> / <i>Salix</i> - <i>Vaccinium uliginosum</i> | Forestland | F231XY184AK |
| 11 percent; D31-Subalpine woodland rocky residual slopes-- | <i>Picea glauca</i> / <i>Betula glandulosa</i> - <i>Empetrum nigrum</i> | Forestland | F231XY164AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|--|----------------------|--------------------|
| D31CF1: 8 percent; D31-Boreal taiga gravelly drainages----- | <i>Picea mariana</i> / <i>Alnus viridis</i> <i>ssp. fruticosa</i> / <i>Calamagrostis canadensis</i> | Forestland | F231XY192AK |
| D31HL1: 37 percent; D31-Boreal taiga silty colluvial slopes, frozen-- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea</i> - <i>Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 27 percent; D31-Boreal taiga organic eolian slopes, frozen--- | <i>Picea mariana</i> / <i>Vaccinium uliginosum</i> - <i>Betula glandulosa</i> / <i>Carex bigelowii</i> | Forestland | F231XY118AK |
| 14 percent; D31-Boreal scrub rocky drainages----- | Boreal Scrub Gravelly Drainages | Rangeland | R231XY195AK |
| 13 percent; D31-Boreal woodland rocky low flood plains----- | <i>Populus balsamifera</i> / <i>Salix alaxensis</i> / <i>Calamagrostis canadensis</i> | Forestland | F231XY130AK |
| 9 percent; D31-Boreal forest loamy high flood plains, frozen | <i>Picea glauca</i> / <i>Alnus viridis</i> <i>ssp. fruticosa</i> | Forestland | F231XY151AK |
| D31HL2: 47 percent; D31-Boreal taiga silty colluvial slopes, frozen-- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea</i> - <i>Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 43 percent; D31-Boreal taiga organic eolian slopes, frozen--- | <i>Picea mariana</i> / <i>Vaccinium uliginosum</i> - <i>Betula glandulosa</i> / <i>Carex bigelowii</i> | Forestland | F231XY118AK |
| 10 percent; D31-Boreal taiga silty drainages, frozen----- | <i>Picea mariana</i> / <i>Salix-Ledum groenlandicum</i> | Forestland | F231XY193AK |
| D31KT1: 79 percent; D31-Boreal taiga organic eolian slopes, frozen--- | <i>Picea mariana</i> / <i>Vaccinium uliginosum</i> - <i>Betula glandulosa</i> / <i>Carex bigelowii</i> | Forestland | F231XY118AK |
| 10 percent; D31-Boreal taiga silty eolian slopes, frozen---- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea</i> - <i>Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 7 percent; D31-Boreal moss organic depressions----- | Boreal Moss Peat Plain | Rangeland | R231XY150AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|--|--|----------------------|--------------------|
| D31KT1: 4 percent; D31-Boreal scrub-sedge organic depressions----- | Boreal Scrub Peat Plains | Rangeland | R231XY158AK |
| D31LB1: 31 percent; D31-Boreal taiga silty eolian slopes, frozen---- | <i>Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 26 percent; D31-Boreal taiga organic eolian slopes, frozen--- | <i>Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii</i> | Forestland | F231XY118AK |
| 23 percent; D31-Boreal forest rocky colluvial slopes----- | <i>Picea glauca-Betula neoalaskana/Alnus viridis ssp. fruticosa-Rosa acicularis</i> | Forestland | F231XY182AK |
| 14 percent; D31-Boreal forest rocky sedimentary colluvial slopes----- | <i>Picea glauca-Populus tremuloides/Shepherdia canadensis-Rosa acicularis/Mertensia paniculata-Geocaulon lividum</i> | Forestland | F231XY110AK |
| 6 percent; D31-Boreal taiga silty drainages, frozen----- | <i>Picea mariana/Salix-Ledum groenlandicum</i> | Forestland | F231XY193AK |
| D31LB2: 36 percent; D31-Boreal taiga silty colluvial slopes, frozen-- | <i>Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 34 percent; D31-Boreal forest rocky sedimentary colluvial slopes----- | <i>Picea glauca-Populus tremuloides/Shepherdia canadensis-Rosa acicularis/Mertensia paniculata-Geocaulon lividum</i> | Forestland | F231XY110AK |
| 27 percent; D31-Boreal forest rocky colluvial slopes----- | <i>Picea glauca-Betula neoalaskana/Alnus viridis ssp. fruticosa-Rosa acicularis</i> | Forestland | F231XY182AK |
| 3 percent; D31-Boreal scrub rocky colluvial escarpments----- | Boreal Scrub Gravelly Slopes, Dry | Rangeland | R231XY109AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|--|--|----------------------|--------------------|
| D31MT1: 66 percent; D31-Alpine rubble land----- | Alpine and Subalpine Lichen Rock Outcrops Slopes | Rangeland | R231XY127AK |
| 22 percent; D31-Alpine low scrub gravelly colluvial slopes----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly Circles, Steep | Rangeland | R231XY134AK |
| 7 percent; D31-Alpine scrub gravelly circles----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly, Circles | Rangeland | R231XY134AK |
| 5 percent; D31-Alpine scrub gravelly circles, acid----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly Hummock | Rangeland | R231XY101AK |
| D31MT2: 32 percent; D31-Alpine low scrub gravelly colluvial slopes----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly Circles, Steep | Rangeland | R231XY34AK |
| 30 percent; D31-Alpine scrub gravelly circles----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly, Circles | Rangeland | R231XY134AK |
| 24 percent; D31-Alpine rubble land----- | Alpine and Subalpine Lichen Rock Outcrops Slopes | Rangeland | R231XY127AK |
| 7 percent; D31-Alpine scrub gravelly circles, acid----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly Hummock | Rangeland | R231XY101AK |
| 7 percent; D31-Alpine scrub loamy hummocks, frozen----- | Alpine Dwarf Scrub-Lichen Mosaic Peat Hummock | Rangeland | R231XY114AK |
| D31MT3: 25 percent; D31-Alpine low scrub organic hummocks, frozen----- | Alpine Dwarf Scrub-Graminoid Mosaic Organic Frozen Mound | Rangeland | R231XY116AK |
| 25 percent; D31-Alpine scrub loamy hummocks, frozen----- | Alpine Dwarf Scrub-Lichen Mosaic Peat Hummock | Rangeland | R231XY114AK |
| 22 percent; D31-Alpine low scrub loamy solifluction lobes----- | Alpine Dwarf Scrub-Graminoid Mosaic Loamy Mound | Rangeland | R231XY113AK |
| 10 percent; D31-Subalpine scrub silty till slopes----- | Subalpine Scrub Loamy Hummock | Rangeland | R231XY148AK |
| 9 percent; D31-Alpine scrub gravelly circles, acid----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly Hummock | Rangeland | R231XY101AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|--|----------------------|--------------------|
| D31MT3: 9 percent; D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | Subalpine Scrub-Tussock Loamy Frozen Hummock | Rangeland | R231XY185AK |
| D31OF1: 27 percent; D31-Boreal forest gravelly colluvial slopes, frozen----- | <i>Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 24 percent; D31-Boreal woodland silty eolian slopes, frozen---- | <i>Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii</i> | Forestland | F231XY118AK |
| 21 percent; D31-Boreal forest rocky sedimentary colluvial slopes----- | <i>Picea glauca-Populus tremuloides/Shepherdia canadensis-Rosa acicularis/Mertensia paniculata-Geocaulon lividum</i> | Forestland | F231XY110AK |
| 10 percent; D31-Boreal forest rocky colluvial slopes----- | <i>Picea glauca-Betula neoalaskana/Alnus viridis ssp. fruticosa-Rosa acicularis</i> | Forestland | F231XY182AK |
| 10 percent; D31-Boreal woodland rocky colluvial slopes----- | <i>Picea mariana-Betula neoalaskana/Vaccinium uliginosum/Cladonia</i> | Forestland | F231XY162AK |
| 8 percent; D31-Boreal scrub rocky drainages----- | Boreal Scrub Gravelly Drainages | Rangeland | R231XY195AK |
| D31OM1: 57 percent; D31-Alpine scrub silty circles----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly Slopes, Basic | Rangeland | R231XY105AK |
| 30 percent; D31-Alpine rubble land----- | Alpine and Subalpine Lichen Rock Outcrops Slopes | Rangeland | R231XY127AK |
| 13 percent; D31-Alpine bedrock--- | Alpine and Subalpine Lichen Rock Outcrops Slopes | Rangeland | R231XY127AK |
| D31OM2: 60 percent; D31-Alpine scrub silty circles----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly Slopes, Basic | Rangeland | R231XY105AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|---|----------------------|--------------------|
| D31OM2: 18 percent; D31-Subalpine woodland silty colluvial slopes, frozen----- | <i>Picea glauca</i> / <i>Salix-Vaccinium uliginosum</i> | Forestland | F231XY184AK |
| 14 percent; D31-Alpine bedrock--- | Alpine and Subalpine Lichen Rock Outcrops Slopes | Rangeland | R231XY127AK |
| 8 percent; D31-Subalpine woodland silty colluvial slopes----- | <i>Picea glauca</i> / <i>Salix pulchra</i> / <i>Carex</i> | Forestland | F231XY140AK |
| D31SD1: 48 percent; D31-Alpine low scrub organic hummocks, frozen----- | Alpine Dwarf Scrub-Graminoid Mosaic Organic Frozen Mound | Rangeland | R231XY116AK |
| 29 percent; D31-Alpine tussock-scrub silty polygons, frozen----- | Alpine Lichen Loamy Polygon | Rangeland | R231XY115AK |
| 11 percent; D31-Subalpine woodland silty colluvial slopes | <i>Picea glauca</i> / <i>Salix pulchra</i> / <i>Carex</i> | Forestland | F231XY140AK |
| 7 percent; D31-Subalpine scrub loamy colluvial slopes, frozen-- | Subalpine Scrub Loamy Frozen Circles | Rangeland | R231XY129AK |
| 5 percent; D31-Alpine rubble land----- | Alpine and Subalpine Lichen Rock Outcrops Slopes | Rangeland | R231XY127AK |
| D31TE1: 62 percent; D31-Boreal taiga/tussock organic terraces, frozen----- | <i>Picea mariana</i> / <i>Ledum palustre</i> ssp. <i>decumbens</i> / <i>Empetrum nigrum</i> | Forestland | F231XY169AK |
| 20 percent; D31-Boreal taiga silty terraces, frozen----- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea</i> - <i>Rosa acicularis</i> | Forestland | F231XY178AK |
| 10 percent; D31-Boreal forest silty drainages, frozen----- | <i>Betula neoalaskana</i> / <i>Alnus incana</i> ssp. <i>tenuifolia</i> | Forestland | F231XY197AK |
| 8 percent; D31-Boreal grass organic depressions----- | Boreal Graminoid Peat Terrace, Depression | Rangeland | R231XY199AK |
| D31TE2: 78 percent; D31-Boreal taiga/tussock organic terraces, frozen----- | <i>Picea mariana</i> / <i>Ledum palustre</i> ssp. <i>decumbens</i> / <i>Empetrum nigrum</i> | Forestland | F231XY169AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|--|---|----------------------|--------------------|
| D31TE2: 12 percent; D31-Boreal forest silty drainages, frozen----- | <i>Betula neoalaskana/Alnus incana ssp. tenuifolia</i> | Forestland | F231XY197AK |
| 10 percent; D31-Boreal grass organic depressions----- | Boreal Graminoid Peat Terrace, Depression | Rangeland | R231XY199AK |
| D31TF1: 55 percent; D31-Subalpine woodland silty colluvial slopes | <i>Picea glauca/Salix pulchra/Carex</i> | Forestland | F231XY140AK |
| 34 percent; D31-Subalpine scrub loamy residual slopes----- | Subalpine Scrub Loamy Slopes | Rangeland | R231XY139AK |
| 6 percent; D31-Subalpine scrub rocky drainages----- | Subalpine Scrub Loamy Drainages | Rangeland | R231XY152AK |
| 5 percent; D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | Subalpine Scrub-Tussock Loamy Frozen Hummock | Rangeland | R231XY185AK |
| D31TF2: 45 percent; D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | Subalpine Scrub-Tussock Loamy Frozen Hummock | Rangeland | R231XY185AK |
| 41 percent; D31-Subalpine scrub silty till slopes----- | Subalpine Scrub Loamy Hummock | Rangeland | R231XY148AK |
| 8 percent; D31-Subalpine scrub rocky drainages----- | Subalpine Scrub Loamy Drainages | Rangeland | R231XY152AK |
| 6 percent; D31-Subalpine grass organic swales----- | Subalpine Graminoid Peat Swale | Rangeland | R231XY149AK |
| D31TH1: 28 percent; D31-Boreal taiga silty colluvial slopes, frozen-- | <i>Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 22 percent; D31-Boreal taiga organic eolian slopes, frozen--- | <i>Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii</i> | Forestland | F231XY118AK |
| 19 percent; D31-Boreal taiga gravelly colluvial slopes----- | <i>Picea mariana-Betula neoalaskana/Vaccinium uliginosum/Cladonia</i> | Forestland | F231XY162AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|---|----------------------|--------------------|
| D31TH1: 17 percent; D31-Boreal woodland silty eolian slopes, frozen----- | <i>Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii</i> | Forestland | F231XY118AK |
| 8 percent; D31-Boreal forest loamy depressions----- | <i>Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 6 percent; D31-Boreal taiga silty drainages, frozen----- | <i>Picea mariana/Salix-Ledum groenlandicum</i> | Forestland | F231XY193AK |
| D31TL1: 44 percent; D31-Boreal taiga organic eolian slopes, frozen--- | <i>Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii</i> | Forestland | F231XY118AK |
| 39 percent; D31-Boreal taiga silty eolian slopes, frozen---- | <i>Picea mariana/Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 10 percent; D31-Boreal forest loamy colluvial slopes----- | <i>Picea glauca/Alnus-Rosa acicularis</i> | Forestland | F231XY117AK |
| 4 percent; D31-Boreal taiga gravelly drainages----- | <i>Picea mariana/Alnus viridis ssp. fruticosa/Calamagrostis canadensis</i> | Forestland | F231XY192AK |
| 3 percent; D31-Boreal moss organic depressions----- | Boreal Moss Peat Plain | Rangeland | R231XY150AK |
| D31UC1: 42 percent; D31-Boreal tussock organic plains, frozen----- | Boreal Tussock Peat Plains | Rangeland | R231XY128AK |
| 24 percent; D31-Boreal taiga organic eolian slopes, frozen--- | <i>Picea mariana/Vaccinium uliginosum-Betula glandulosa/Carex bigelowii</i> | Forestland | F231XY118AK |
| 21 percent; D31-Boreal forest loamy high flood plains----- | <i>Picea glauca/Rosa acicularis/Lupinus arcticus</i> | Forestland | F231XY131AK |
| 9 percent; D31-Boreal woodland rocky low flood plains----- | <i>Populus balsamifera/Salix alaxensis/Calamagrostis canadensis</i> | Forestland | F231XY130AK |
| 4 percent; D31-Boreal water, flowing----- | Boreal Water, Non-Vegetated | Rangeland | R231XY194AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|---|----------------------|--------------------|
| D31UC2: 40 percent; D31-Subalpine woodland silty colluvial slopes, frozen----- | <i>Picea glauca</i> / <i>Salix-Vaccinium uliginosum</i> | Forestland | F231XY184AK |
| 31 percent; D31-Boreal forest gravelly colluvial slopes, frozen----- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 13 percent; D31-Subalpine woodland rocky colluvial slopes, cold----- | <i>Picea mariana</i> / <i>Betula glandulosa</i> | Forestland | F231XY124AK |
| 10 percent; D31-Subalpine scrub loamy colluvial slopes, frozen-- | Subalpine Scrub Loamy Frozen Circles | Rangeland | R231XY129AK |
| 6 percent; D31-Boreal scrub rocky drainages----- | Boreal Scrub Gravelly Drainages | Rangeland | R231XY195AK |
| D31UC3: 65 percent; D31-Boreal tussock organic plains, frozen----- | Boreal Tussock Peat Plains | Rangeland | R231XY128AK |
| 18 percent; D31-Boreal taiga silty colluvial slopes, frozen-- | <i>Picea mariana</i> / <i>Vaccinium vitis-idaea-Vaccinium uliginosum</i> | Forestland | F231XY111AK |
| 10 percent; D31-Boreal taiga silty drainages, frozen----- | <i>Picea mariana</i> / <i>Salix-Ledum groenlandicum</i> | Forestland | F231XY193AK |
| 7 percent; D31-Boreal forest rocky colluvial slopes----- | <i>Picea glauca</i> - <i>Betula neoalaskana</i> / <i>Alnus viridis</i> ssp. <i>fruticosa</i> - <i>Rosa acicularis</i> | Forestland | F231XY182AK |
| D31UC4: 32 percent; D31-Boreal woodland rocky low flood plains----- | <i>Populus balsamifera</i> / <i>Salix alaxensis</i> / <i>Calamagrostis canadensis</i> | Forestland | F231XY130AK |
| 25 percent; D31-Boreal forest loamy high flood plains----- | <i>Picea glauca</i> / <i>Rosa acicularis</i> / <i>Lupinus arcticus</i> | Forestland | F231XY131AK |
| 13 percent; D31-Boreal taiga/tussock organic terraces, frozen----- | <i>Picea mariana</i> / <i>Ledum palustre</i> ssp. <i>decumbens</i> / <i>Empetrum nigrum</i> | Forestland | F231XY169AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|--|----------------------|--------------------|
| D31UC4: 11 percent; D31-Boreal scrub organic depressions----- | Boreal Scrub Peat Floodplain | Rangeland | R231XY137AK |
| 10 percent; D31-Boreal riverwash | Boreal Gravelly Floodplain, Non-Vegetated | Rangeland | R231XY126AK |
| 9 percent; D31-Boreal forest loamy high flood plains, frozen | <i>Picea glauca</i> / <i>Alnus viridis</i> ssp. <i>fruticosa</i> | Forestland | F231XY151AK |
| D31UC5: 35 percent; D31-Subalpine scrub silty till slopes----- | Subalpine Scrub Loamy Hummock | Rangeland | R231XY148AK |
| 30 percent; D31-Alpine scrub gravelly circles, acid----- | Alpine Dwarf Scrub-Lichen Mosaic Gravelly Hummock | Rangeland | R231XY101AK |
| 13 percent; D31-Alpine scrub loamy hummocks, frozen----- | Alpine Dwarf Scrub-Lichen Mosaic Peat Hummock | Rangeland | R231XY114AK |
| 12 percent; D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | Subalpine Scrub-Tussock Loamy Frozen Hummock | Rangeland | R231XY185AK |
| 10 percent; D31-Subalpine scrub rocky drainages----- | Subalpine Scrub Loamy Drainages | Rangeland | R231XY152AK |
| D31WA1: 95 percent; D31-Alpine water, ponded----- | Boreal Water, Non-Vegetated | Rangeland | R231XY194AK |
| 5 percent; D31-Subalpine scrub rocky drainages----- | Subalpine Scrub Loamy Drainages | Rangeland | R231XY152AK |
| D31YV1: 36 percent; D31-Boreal forest loamy mid flood plains----- | <i>Populus balsamifera</i> | Forestland | F231XY189AK |
| 32 percent; D31-Boreal taiga loamy high flood plains, frozen | <i>Picea glauca</i> | Forestland | F231XY196AK |
| 26 percent; D31-Boreal scrub sandy low flood plains----- | Boreal Scrub Sandy Floodplain, Low | Rangeland | R231XY198AK |
| 6 percent; D31-Boreal riverwash-- | Boreal Gravelly Floodplain, Non-Vegetated | Rangeland | R231XY126AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|--|----------------------|--------------------|
| D31YV2: 55 percent; D31-Boreal taiga/tussock organic terraces, frozen----- | <i>Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum</i> | Forestland | F231XY169AK |
| 32 percent; D31-Boreal taiga loamy high flood plains, frozen | <i>Picea glauca</i> | Forestland | F231XY196AK |
| 7 percent; D31-Boreal water, ponded----- | Boreal Water, Non-Vegetated | Rangeland | R231XY194AK |
| 6 percent; D31-Boreal scrub organic depressions----- | Boreal Scrub Peat Floodplain | Rangeland | R231XY137AK |
| D31YV3: 90 percent; D31-Boreal taiga/tussock organic terraces, frozen----- | <i>Picea mariana/Ledum palustre ssp. decumbens/Empetrum nigrum</i> | Forestland | F231XY169AK |
| 10 percent; D31-Boreal grass organic depressions----- | Boreal Graminoid Peat Terrace, Depression | Rangeland | R231XY199AK |
| D31YV8: 70 percent; D31-Boreal water, flowing----- | Boreal Water, Non-Vegetated | Rangeland | R231XY194AK |
| 14 percent; D31-Boreal scrub sandy low flood plains----- | Boreal Scrub Sandy Floodplain, Low | Rangeland | R231XY198AK |
| 10 percent; D31-Boreal riverwash | Boreal Gravelly Floodplain, Non-Vegetated | Rangeland | R231XY126AK |
| 6 percent; D31-Boreal forest loamy mid flood plains----- | <i>Populus balsamifera</i> | Forestland | F231XY189AK |
| D31YV9: 78 percent; D31-Boreal taiga loamy high flood plains, frozen | <i>Picea glauca</i> | Forestland | F231XY196AK |
| 11 percent; D31-Boreal scrub sandy low flood plains----- | Boreal Scrub Sandy Floodplain, Low | Rangeland | R231XY198AK |
| 7 percent; D31-Boreal scrub organic depressions----- | Boreal Scrub Peat Floodplain | Rangeland | R231XY137AK |
| 4 percent; D31-Boreal scrub loamy depressions----- | Boreal Scrub Loamy Depression | Rangeland | R231XY138AK |
| D32TL1: 79 percent; D32-Boreal taiga organic plains, frozen----- | <i>Picea mariana/Vaccinium uliginosum-Ledum groenlandicum</i> | Forestland | F232XY201AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 5.--Soil-Ecological Site Correlation--Continued

| Map unit symbol, percentage of map unit, and soil name | Ecological site name | Ecological site type | Ecological site ID |
|---|--|----------------------|--------------------|
| D32TL1: 9 percent; D32-Boreal woodland loamy drainages, frozen----- | <i>Picea mariana</i> / <i>Salix pulchra</i> - <i>Alnus viridis</i> ssp. <i>fruticosa</i> | Forestland | F232XY203AK |
| 8 percent; D32-Boreal forest gravelly escarpments, frozen---- | <i>Picea glauca</i> - <i>Betula papyrifera</i> / <i>Alnus viridis</i> ssp. <i>fruticosa</i> | Forestland | F232XY210AK |
| 4 percent; Boreal moss organic depressions----- | Boreal Moss Peat Depression | Rangeland | R232XY220AK |
| D32TL2: 40 percent; D32-Boreal forest gravelly escarpments, frozen---- | <i>Picea glauca</i> - <i>Betula papyrifera</i> / <i>Alnus viridis</i> ssp. <i>fruticosa</i> | Forestland | F232XY210AK |
| 30 percent; D32-Boreal taiga loamy escarpment slopes----- | <i>Picea glauca</i> / <i>Shepherdia canadensis</i> - <i>Rosa acicularis</i> | Forestland | F232XY211AK |
| 20 percent; D32-Boreal taiga silty eolian slopes, frozen---- | <i>Picea mariana</i> / <i>Alnus viridis</i> ssp. <i>fruticosa</i> - <i>Ledum groenlandicum</i> | Forestland | F232XY227AK |
| 7 percent; D32-Boreal taiga organic plains, frozen----- | <i>Picea mariana</i> / <i>Vaccinium uliginosum</i> - <i>Ledum groenlandicum</i> | Forestland | F232XY201AK |
| 3 percent; D32-Boreal woodland loamy drainages, frozen----- | <i>Picea mariana</i> / <i>Salix pulchra</i> - <i>Alnus viridis</i> ssp. <i>fruticosa</i> | Forestland | F232XY203AK |
| D32TL4: 83 percent; D32-Boreal taiga organic plains, frozen----- | <i>Picea mariana</i> / <i>Vaccinium uliginosum</i> - <i>Ledum groenlandicum</i> | Forestland | F232XY201AK |
| 10 percent; D32-Boreal woodland loamy drainages, frozen----- | <i>Picea mariana</i> / <i>Salix pulchra</i> - <i>Alnus viridis</i> ssp. <i>fruticosa</i> | Forestland | F232XY203AK |
| 7 percent; D32-Boreal moss organic depressions----- | Boreal Moss Peat Depression | Rangeland | R232XY220AK |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area

| Plant symbol | Scientific name | Common name |
|--------------|--|---------------------------|
| 2FUNG1 | | Fungus |
| 2LC | | Lichen, crustose |
| 2LF | | Lichen, foliose |
| 2LICHN | | Lichen |
| 2LU | | Lichen, fruticose |
| 2LW | | Liverwort |
| 2MOSS | | Moss |
| ABAB70 | <i>Abietinella abietina</i> | Abietinella moss |
| ACDE2 | <i>Aconitum delphiniifolium</i> | Larkspurleaf monkshood |
| ACDED3 | <i>Aconitum delphiniifolium ssp. delphiniifolium</i> | Larkspurleaf monkshood |
| ACDEP | <i>Aconitum delphiniifolium ssp. paradoxum</i> | Larkspurleaf monkshood |
| ACMI2 | <i>Achillea millefolium</i> | Common yarrow |
| ACMIB | <i>Achillea millefolium var. borealis</i> | Boreal yarrow |
| ACMIO | <i>Achillea millefolium var. occidentalis</i> | Western yarrow |
| ACRU2 | <i>Actaea rubra</i> | Red baneberry |
| ACSI | <i>Achillea sibirica</i> | Siberian yarrow |
| ADMO | <i>Adoxa moschatellina</i> | Muskroot |
| AGROP2 | <i>Agropyron</i> | Wheatgrass |
| AGROS2 | <i>Agrostis</i> | Bentgrass |
| AGSC5 | <i>Agrostis scabra</i> | Rough bentgrass |
| ALAE | <i>Alopecurus aequalis</i> | Shortawn foxtail |
| ALINT | <i>Alnus incana ssp. tenuifolia</i> | Thinleaf alder |
| ALNUS | <i>Alnus</i> | Alder |
| ALOC60 | <i>Alectoria ochroleuca</i> | Witch's hair lichen |
| ALSC | <i>Allium schoenoprasum</i> | Wild chives |
| ALSCS | <i>Allium schoenoprasum var. sibiricum</i> | Wild chives |
| ALVIF | <i>Alnus viridis ssp. fruticosa</i> | Siberian alder |
| AMAL2 | <i>Amelanchier alnifolia</i> | Saskatoon serviceberry |
| ANAL4 | <i>Antennaria alpina</i> | Alpine pussytoes |
| ANCH | <i>Androsace chamaejasme</i> | Sweetflower rockjasmine |
| ANDR | <i>Anemone drummondii</i> | Drummond's anemone |
| ANEMO | <i>Anemone</i> | Anemone |
| ANFR | <i>Antennaria friesiana</i> | Fries' pussytoes |
| ANMO9 | <i>Antennaria monocephala</i> | Pygmy pussytoes |
| ANMU | <i>Anemone multifida</i> | Pacific anemone |
| ANNA | <i>Anemone narcissiflora</i> | Narcissus anemone |
| ANPA | <i>Anemone parviflora</i> | Smallflowered anemone |
| ANPO | <i>Andromeda polifolia</i> | Bog rosemary |
| ANRI | <i>Anemone richardsonii</i> | Yellow thimbleweed |
| ANRO2 | <i>Antennaria rosea</i> | Rosy pussytoes |
| ANRU7 | <i>Andreaea rupestris</i> | Andreaea moss |
| ANSE4 | <i>Androsace septentrionalis</i> | Pygmyflower rockjasmine |
| ANTEN | <i>Antennaria</i> | Pussytoes |
| APAN2 | <i>Apocynum androsaemifolium</i> | Spreading dogbane |
| AQBR | <i>Aquilegia brevistyla</i> | Smallflower columbine |
| AQUIL | <i>Aquilegia</i> | Columbine |
| ARABI2 | <i>Arabis</i> | Rockcress |
| ARAL2 | <i>Arctostaphylos alpina</i> | Alpine bearberry |
| ARAL5 | <i>Artemisia alaskana</i> | Alaska wormwood |
| ARAN5 | <i>Arnica angustifolia</i> | Narrowleaf arnica |
| ARAN7 | <i>Argentina anserina</i> | Silverweed cinquefoil |
| ARANA | <i>Arnica angustifolia ssp. angustifolia</i> | Narrowleaf arnica |
| ARAR9 | <i>Artemisia arctica</i> | Boreal sagebrush |
| ARARA2 | <i>Artemisia arctica ssp. arctica</i> | Boreal sagebrush |
| ARCA12 | <i>Artemisia campestris</i> | Field sagewort |
| ARCA7 | <i>Arenaria capillaris</i> | Slender mountain sandwort |
| ARCE60 | <i>Arctoparmelia centrifuga</i> | Arctoparmelia lichen |
| AREG | <i>Argentina egedii</i> | Pacific silverweed |
| AREGE | <i>Argentina egedii ssp. egedii</i> | Pacific silverweed |
| ARFR2 | <i>Arnica frigida</i> | Snow arnica |
| ARFR4 | <i>Artemisia frigida</i> | Prairie sagewort |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|---|---------------------------------|
| ARHO2 | <i>Arabis holboellii</i> | Holboell's rockcress |
| ARLA2 | <i>Arctagrostis latifolia</i> | Wideleaf polargrass |
| ARLA9 | <i>Artemisia laciniata</i> | Siberian wormwood |
| ARLE2 | <i>Arnica lessingii</i> | Nodding arnica |
| ARLO5 | <i>Arnica lonchophylla</i> | Longleaf arnica |
| ARMO4 | <i>Arnica mollis</i> | Hairy arnica |
| ARNIC | <i>Arnica</i> | Arnica |
| ARRU | <i>Arctostaphylos rubra</i> | Red fruit bearberry |
| ARTEM | <i>Artemisia</i> | Sagebrush |
| ARTI | <i>Artemisia tilesii</i> | Tilesius' wormwood |
| ARUV | <i>Arctostaphylos uva-ursi</i> | Kinnikinnick |
| ASAH12 | <i>Asahinea</i> | Asahinea lichen |
| ASAL3 | <i>Aster alpinus</i> | Alpine aster |
| ASAL7 | <i>Astragalus alpinus</i> | Alpine milkvetch |
| ASAU4 | <i>Astragalus australis</i> | Indian milkvetch |
| ASBO | <i>Astragalus bodinii</i> | Bodin's milkvetch |
| ASCI9 | <i>Aspicilia cinerea</i> | Rimmed lichen |
| ASTER | <i>Aster</i> | Aster |
| ASTRA | <i>Astragalus</i> | Milkvetch |
| ASUM2 | <i>Astragalus umbellatus</i> | Tundra milkvetch |
| AULAC2 | <i>Aulacomnium</i> | Aulacomnium moss |
| AUPA70 | <i>Aulacomnium palustre</i> | Aulacomnium moss |
| AUTU70 | <i>Aulacomnium turgidum</i> | Turgid aulacomnium moss |
| B EGL | <i>Betula glandulosa</i> | Shrub birch |
| BENA | <i>Betula nana</i> | Dwarf birch |
| BENE4 | <i>Betula neoalaskana</i> | Resin birch |
| BEOC2 | <i>Betula occidentalis</i> | Water birch |
| BESA3 | <i>Betula x sargentii</i> | Sargent birch |
| BESY | <i>Beckmannia syzigachne</i> | American sloughgrass |
| BETUL | <i>Betula</i> | Birch |
| BORI2 | <i>Boykinia richardsonii</i> | Richardson's brookfoam |
| BORO | <i>Boschniakia rossica</i> | Northern groundcone |
| BRACH10 | <i>Brachythecium</i> | Brachythecium moss |
| BRCI2 | <i>Bromus ciliatus</i> | Fringed brome |
| BRDI60 | <i>Bryocaulon divergens</i> | Bryocaulon lichen |
| BRINP5 | <i>Bromus inermis ssp. pumpellianus var. pumpellianus</i> | Pumpelly's brome |
| BRODO2 | <i>Brodoa</i> | Brodoa lichen |
| BROMU | <i>Bromus</i> | Brome |
| BRSA7 | <i>Brachythecium salebrosum</i> | Brachythecium moss |
| BRYOR2 | <i>Bryoria</i> | Horsehair lichen |
| BRYUM2 | <i>Bryum</i> | Bryum moss |
| BUAM2 | <i>Bupleurum americanum</i> | American thorow wax |
| CAAQ | <i>Carex aquatilis</i> | Water sedge |
| CAAT2 | <i>Carex atherodes</i> | Wheat sedge |
| CAAU3 | <i>Carex aurea</i> | Golden sedge |
| CABE | <i>Cardamine bellidifolia</i> | Alpine bittercress |
| CABI5 | <i>Carex bigelowii</i> | Bigelow's sedge |
| CACA11 | <i>Carex canescens</i> | Silvery sedge |
| CACA12 | <i>Carex capillaris</i> | Hairlike sedge |
| CACA13 | <i>Carex capitata</i> | Capitate sedge |
| CACA20 | <i>Castilleja caudata</i> | Port Clarence Indian paintbrush |
| CACA4 | <i>Calamagrostis canadensis</i> | Bluejoint |
| CACO10 | <i>Carex concinna</i> | Low northern sedge |
| CADE9 | <i>Carex deweyana</i> | Dewey sedge |
| CADI4 | <i>Carex diandra</i> | Lesser panicled sedge |
| CAEL6 | <i>Castilleja elegans</i> | Elegant Indian paintbrush |
| CAHY6 | <i>Castilleja hyperborea</i> | Northern Indian paintbrush |
| CALA10 | <i>Carex lachenalii</i> | Twotipped sedge |
| CALA11 | <i>Carex lasiocarpa</i> | Woollyfruit sedge |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|---|-------------------------------|
| CALA7 | <i>Campanula lasiocarpa</i> | Mountain harebell |
| CALAM | <i>Calamagrostis</i> | Reedgrass |
| CALI7 | <i>Carex limosa</i> | Mud sedge |
| CALLI10 | <i>Calliergon</i> | Calliergon moss |
| CALO4 | <i>Carex loliacea</i> | Ryegrass sedge |
| CAME4 | <i>Carex membranacea</i> | Fragile sedge |
| CAMI4 | <i>Carex microchaeta</i> | Smallawned sedge |
| CAMIM | <i>Carex microchaeta ssp. microchaeta</i> | Smallawned sedge |
| CAMPA | <i>Campanula</i> | Bellflower |
| CAOL | <i>Cardamine oligosperma</i> | Little western bittercress |
| CAOLK | <i>Cardamine oligosperma var. kamtschatica</i> | Umbel bittercress |
| CAPA26 | <i>Castilleja parviflora</i> | Mountain Indian paintbrush |
| CAPA5 | <i>Caltha palustris</i> | Yellow marsh marigold |
| CAPO | <i>Carex podocarpa</i> | Shortstalk sedge |
| CAPR3 | <i>Cardamine pratensis</i> | Cuckoo flower |
| CAPU | <i>Calamagrostis purpurascens</i> | Purple reedgrass |
| CAPU5 | <i>Cardamine purpurea</i> | Purple bittercress |
| CARA5 | <i>Carex rariflora</i> | Looseflower alpine sedge |
| CARDA | <i>Cardamine</i> | Bittercress |
| CAREX | <i>Carex</i> | Sedge |
| CARO2 | <i>Campanula rotundifolia</i> | Bluebell bellflower |
| CARO7 | <i>Carex rotundata</i> | Round sedge |
| CASA10 | <i>Carex saxatilis</i> | Rock sedge |
| CASC10 | <i>Carex scirpoidea</i> | Northern singlespike sedge |
| CASI12 | <i>Carex siccata</i> | Dryspike sedge |
| CAST10 | <i>Carex stylosa</i> | Variegated sedge |
| CAST36 | <i>Calamagrostis stricta</i> | Slimstem reedgrass |
| CASTI2 | <i>Castilleja</i> | Indian paintbrush |
| CASTI3 | <i>Calamagrostis stricta ssp. inexpansa</i> | Northern reedgrass |
| CATE11 | <i>Cassiope tetragona</i> | White arctic mountain heather |
| CATE5 | <i>Carex tenuiflora</i> | Sparseflower sedge |
| CAUT | <i>Carex utriculata</i> | Northwest Territory sedge |
| CAVA2 | <i>Carex vaginata</i> | Sheathed sedge |
| CAYU | <i>Castilleja yukonis</i> | Yukon Indian paintbrush |
| CEBE2 | <i>Cerastium beeringianum</i> | Bering chickweed |
| CEER6 | <i>Cetraria ericetorum</i> | Cetraria lichen |
| CEIS60 | <i>Cetraria islandica</i> | Island cetraria lichen |
| CEMA5 | <i>Cerastium maximum</i> | Great chickweed |
| CENI60 | <i>Cetraria nigricans</i> | Cetraria lichen |
| CEPU12 | <i>Ceratodon purpureus</i> | Ceratodon moss |
| CERAS | <i>Cerastium</i> | Mouse-ear chickweed |
| CETRA2 | <i>Cetraria</i> | Cetraria lichen |
| CHAME2 | <i>Chamerion</i> | Fireweed |
| CHAN9 | <i>Chamerion angustifolium</i> | Fireweed |
| CHANA2 | <i>Chamerion angustifolium ssp. angustifolium</i> | Fireweed |
| CHCA2 | <i>Chamaedaphne calyculata</i> | Leatherleaf |
| CHCA4 | <i>Chenopodium capitatum</i> | Blite goosefoot |
| CHLA13 | <i>Chamerion latifolium</i> | Dwarf fireweed |
| CHTE3 | <i>Chrysosplenium tetrandrum</i> | Northern golden saxifrage |
| CIAL | <i>Circaea alpina</i> | Small enchanter's nightshade |
| CIVI5 | <i>Cicuta virosa</i> | Mackenzie's water hemlock |
| CIVI5 | <i>Cicuta virosa</i> | Mackenzie's water hemlock |
| CLADI3 | <i>Cladina</i> | Reindeer lichen |
| CLADO3 | <i>Cladonia</i> | Cup lichen |
| CLBE4 | <i>Cladonia bellidiflora</i> | Cup lichen |
| CLBO7 | <i>Cladonia borealis</i> | Boreal cup lichen |
| CLBO9 | <i>Cladonia botrytes</i> | Cup lichen |
| CLCA9 | <i>Cladonia cariosa</i> | Cup lichen |
| CLCH3 | <i>Cladonia chlorophaea</i> | Cup lichen |
| CLCO12 | <i>Cladonia coccifera</i> | Cup lichen |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|---|-----------------------------|
| CLC019 | <i>Cladonia cornuta</i> | Cup lichen |
| CLDE60 | <i>Cladonia deformis</i> | Deformed cup lichen |
| CLDE70 | <i>Climacium dendroides</i> | Tree climacium moss |
| CLFI2 | <i>Cladonia fimbriata</i> | Cup lichen |
| CLGR13 | <i>Cladonia gracilis</i> | Cup lichen |
| CLMI60 | <i>Cladonia mitis</i> | Reindeer lichen |
| CLMU60 | <i>Cladonia multiformis</i> | Cup lichen |
| CLPH60 | <i>Cladonia phyllophora</i> | Cup lichen |
| CLPL60 | <i>Cladonia pleurota</i> | Cup lichen |
| CLPO60 | <i>Cladonia pocillum</i> | Cup lichen |
| CLPY60 | <i>Cladonia pyxidata</i> | Cup lichen |
| CLRA60 | <i>Cladonia rangiferina</i> | Greygreen reindeer lichen |
| CLSA2 | <i>Claytonia sarmentosa</i> | Alaska springbeauty |
| CLSC60 | <i>Cladonia scabriuscula</i> | Cup lichen |
| CLST5 | <i>Cladonia stygia</i> | Reindeer lichen |
| CLST60 | <i>Cladonia stellaris</i> | Star reindeer lichen |
| CLUN60 | <i>Cladonia uncialis</i> | Cup lichen |
| CNCN | <i>Cnidium cnidiifolium</i> | Jakutsk snowparsley |
| COCA13 | <i>Cornus canadensis</i> | Bunchberry dogwood |
| COCO38 | <i>Conocephalum conicum</i> | Scented liverwort |
| COPA28 | <i>Comarum palustre</i> | Purple marshlocks |
| COSE5 | <i>Corydalis sempervirens</i> | Rock harlequin |
| COSE5 | <i>Cornus sericea ssp. sericea</i> | Redosier dogwood |
| COTE70 | <i>Conostomum tetragonum</i> | Conostomum moss |
| COTR2 | <i>Coptis trifolia</i> | Threeleaf goldthread |
| COTR3 | <i>Coralorrhiza trifida</i> | Yellow coralroot |
| CREL | <i>Crepis elegans</i> | Elegant hawksbeard |
| CYFR2 | <i>Cystopteris fragilis</i> | Brittle bladderfern |
| CYGU | <i>Cypripedium guttatum</i> | Spotted lady's slipper |
| CYPA5 | <i>Cypripedium passerinum</i> | Sparrowegg lady's slipper |
| CYPRI | <i>Cypripedium</i> | Lady's slipper |
| DAAR60 | <i>Dactylina arctica</i> | Arctic dactylina lichen |
| DACTY4 | <i>Dactylina</i> | Dactylina lichen |
| DEBR | <i>Delphinium brachycentrum</i> | Northern larkspur |
| DECA18 | <i>Deschampsia caespitosa</i> | Tufted hairgrass |
| DEGL3 | <i>Delphinium glaucum</i> | Sierra larkspur |
| DELPH | <i>Delphinium</i> | Larkspur |
| DESO3 | <i>Descurainia sophioides</i> | Northern tansymustard |
| DICR71 | <i>Dicranoweisia crispula</i> | Dicranoweisia moss |
| DICRA8 | <i>Dicranum</i> | Dicranum moss |
| DILA | <i>Diapensia lapponica</i> | Pincushion plant |
| DITRI2 | <i>Ditrichum</i> | Ditrichum moss |
| DOFR | <i>Dodecatheon frigidum</i> | Western arctic shootingstar |
| DRDE | <i>Draba densifolia</i> | Denseleaf draba |
| DRFR | <i>Dryopteris fragrans</i> | Fragrant woodfern |
| DRIN4 | <i>Dryas integrifolia</i> | Entireleaf mountain-avens |
| DRINS | <i>Dryas integrifolia ssp. sylvatica</i> | Entireleaf mountain-avens |
| DROC | <i>Dryas octopetala</i> | Eightpetal mountain-avens |
| DROSE | <i>Drosera</i> | Sundew |
| DRRO | <i>Drosera rotundifolia</i> | Roundleaf sundew |
| DRYAS | <i>Dryas</i> | Mountain-avens |
| DRYOP | <i>Dryopteris</i> | Woodfern |
| ELCO | <i>Elaeagnus commutata</i> | Silverberry |
| ELMA7 | <i>Elymus macrourus</i> | Thickspike wheatgrass |
| ELTR7 | <i>Elymus trachycaulus</i> | Slender wheatgrass |
| ELTRS | <i>Elymus trachycaulus ssp. subsecundus</i> | Slender wheatgrass |
| ELYMU | <i>Elymus</i> | Wildrye |
| EMNI | <i>Empetrum nigrum</i> | Black crowberry |
| EPAN2 | <i>Epilobium angustifolium</i> | Fireweed |
| EPDA | <i>Epilobium davuricum</i> | Dahurian willowherb |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|---|-----------------------------|
| EPILO | <i>Epilobium</i> | Willowherb |
| EQAR | <i>Equisetum arvense</i> | Field horsetail |
| EQFL | <i>Equisetum fluviatile</i> | Water horsetail |
| EQHY | <i>Equisetum hyemale</i> | Scouringrush horsetail |
| EQPA | <i>Equisetum palustre</i> | Marsh horsetail |
| EQPR | <i>Equisetum pratense</i> | Meadow horsetail |
| EQSC | <i>Equisetum scirpoides</i> | Dwarf scouringrush |
| EQSY | <i>Equisetum sylvaticum</i> | Woodland horsetail |
| EQUIS | <i>Equisetum</i> | Horsetail |
| EQVA | <i>Equisetum variegatum</i> | Variegated scouringrush |
| ERACP2 | <i>Erigeron acris ssp. politus</i> | Bitter fleabane |
| ERAN6 | <i>Eriophorum angustifolium</i> | Tall cottongrass |
| ERBR6 | <i>Eriophorum brachyantherum</i> | Northland cottonsedge |
| ERCA2 | <i>Erigeron caespitosus</i> | Tufted fleabane |
| ERGL2 | <i>Erigeron glabellus</i> | Streamside fleabane |
| ERGR8 | <i>Eriophorum gracile</i> | Slender cottongrass |
| ERHU | <i>Erigeron humilis</i> | Arctic alpine fleabane |
| ERIGE2 | <i>Erigeron</i> | Fleabane |
| ERiop | <i>Eriophorum</i> | Cottongrass |
| ERRU2 | <i>Eriophorum russeolum</i> | Red cottongrass |
| ERSC2 | <i>Eriophorum scheuchzeri</i> | White cottongrass |
| ERVA4 | <i>Eriophorum vaginatum</i> | Tussock cottongrass |
| EUSI13 | <i>Eurybia sibirica</i> | Arctic aster |
| EVME60 | <i>Evernia mesomorpha</i> | Ring lichen |
| FEAL | <i>Festuca altaica</i> | Altai fescue |
| FEBR | <i>Festuca brachyphylla</i> | Alpine fescue |
| FERU2 | <i>Festuca rubra</i> | Red fescue |
| FESTU | <i>Festuca</i> | Fescue |
| FLCU | <i>Flavocetraria cucullata</i> | Flavo lichen |
| FLNI | <i>Flavocetraria nivalis</i> | Fleavo lichen |
| GABO2 | <i>Galium boreale</i> | Northern bedstraw |
| GATR2 | <i>Galium trifidum</i> | Threepetal bedstraw |
| GEAL2 | <i>Gentiana algida</i> | Whitish gentian |
| GEAL3 | <i>Geum aleppicum</i> | Yellow avens |
| GEGL | <i>Gentiana glauca</i> | Pale gentian |
| GELI2 | <i>Geocaulon lividum</i> | False toadflax |
| GENTI | <i>Gentiana</i> | Gentian |
| GEPR3 | <i>Gentiana prostrata</i> | Pygmy gentian |
| GEPR5 | <i>Gentianella propinqua</i> | Fourpart dwarf gentian |
| GEPRP | <i>Gentianella propinqua ssp. propinqua</i> | Fourpart dwarf gentian |
| GERO2 | <i>Geum rossii</i> | Ross' avens |
| GLGR | <i>Glyceria grandis</i> | American mannagrass |
| GORE2 | <i>Goodyera repens</i> | Lesser rattlesnake plantain |
| GYDR | <i>Gymnocarpium dryopteris</i> | Western oakfern |
| GYJE | <i>Gymnocarpium jessoense</i> | Asian oakfern |
| HEAL | <i>Hedysarum alpinum</i> | Alpine sweetvetch |
| HEBO | <i>Hedysarum boreale</i> | Boreal sweetvetch |
| HEDYS | <i>Hedysarum</i> | Sweetvetch |
| HIAL2 | <i>Hieracium albiflorum</i> | White hawkweed |
| HIAL3 | <i>Hierochloa alpina</i> | Alpine sweetgrass |
| HIERO | <i>Hierochloa</i> | Sweetgrass |
| HIOD | <i>Hierochloa odorata</i> | Vanilla grass |
| HIVU2 | <i>Hippuris vulgaris</i> | Common mare's-tail |
| HUSES | <i>Huperzia selago var. selago</i> | Fir clubmoss |
| HYPH60 | <i>Hypogymnia physodes</i> | Tube lichen |
| HYPOG2 | <i>Hypogymnia</i> | Tube lichen |
| HYRE70 | <i>Hypnum revolutum</i> | Revolute hypnum moss |
| HYSP70 | <i>Hylocomium splendens</i> | Splendid feather moss |
| ICER | <i>Icmaophila ericetorum</i> | Peppermint drop lichen |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|---|-------------------------------|
| JUAL4 | <i>Juncus alpinoarticulatus</i> | Northern green rush |
| JUAR2 | <i>Juncus arcticus</i> | Arctic rush |
| JUARA | <i>Juncus arcticus</i> ssp. <i>alaskanus</i> | Alaska rush |
| JUCA6 | <i>Juncus castaneus</i> | Chestnut rush |
| JUCAC2 | <i>Juncus castaneus</i> ssp. <i>castaneus</i> | Chestnut rush |
| JUCO6 | <i>Juniperus communis</i> | Common juniper |
| JUTE | <i>Juncus tenuis</i> | Poverty rush |
| KOMA | <i>Koeleria macrantha</i> | Prairie Junegrass |
| LECID2 | <i>Lecidea</i> | Lecidea lichen |
| LEDUM | <i>Ledum</i> | Labrador tea |
| LEGR | <i>Ledum groenlandicum</i> | Bog Labrador tea |
| LEPAD | <i>Ledum palustre</i> ssp. <i>decumbens</i> | Marsh Labrador tea |
| LETE60 | <i>Lecidea tessellata</i> | Lecidea lichen |
| LIBO3 | <i>Linnaea borealis</i> | Twinflower |
| LIBO4 | <i>Listera borealis</i> | Northern twayblade |
| LLSE | <i>Lloydia serotina</i> | Common alplily |
| LOPR | <i>Loiseleuria procumbens</i> | Alpine azalea |
| LUAR2 | <i>Lupinus arcticus</i> | Arctic lupine |
| LUAR9 | <i>Luzula arctica</i> | Arctic woodrush |
| LUARU | <i>Luzula arcuata</i> ssp. <i>unalaschensis</i> | Alaska curved woodrush |
| LUCO5 | <i>Luzula confusa</i> | Northern woodrush |
| LUGR8 | <i>Luzula groenlandica</i> | Greenland woodrush |
| LUMU2 | <i>Luzula multiflora</i> | Common woodrush |
| LUPA4 | <i>Luzula parviflora</i> | Smallflowered woodrush |
| LURU2 | <i>Luzula rufescens</i> | Rufous woodrush |
| LUSP4 | <i>Luzula spicata</i> | Spiked woodrush |
| LUZUL | <i>Luzula</i> | Woodrush |
| LYAL3 | <i>Lycopodium alpinum</i> | Alpine clubmoss |
| LYAN2 | <i>Lycopodium annotinum</i> | Stiff clubmoss |
| LYCL | <i>Lycopodium clavatum</i> | Running clubmoss |
| LYCO3 | <i>Lycopodium complanatum</i> | Groundcedar |
| LYCOP2 | <i>Lycopodium</i> | Clubmoss |
| LYDE | <i>Lycopodium dendroideum</i> | Tree groundpine |
| MAPA4 | <i>Malaxis paludosa</i> | Bog adder's-mouth orchid |
| MAPO16 | <i>Marchantia polymorpha</i> | Marchantia polymorpha |
| MARI60 | <i>Masonhalea richardsonii</i> | Richardson's manohalea lichen |
| MELAN5 | <i>Melanelia</i> | Melanelia lichen |
| MEPA | <i>Mertensia paniculata</i> | Tall bluebells |
| METR3 | <i>Menyanthes trifoliata</i> | Buckbean |
| MEUL70 | <i>Meesia uliginosa</i> | Meesia moss |
| MIAR3 | <i>Minuartia arctica</i> | Arctic stitchwort |
| MIBI9 | <i>Minuartia biflora</i> | Mountain stitchwort |
| MINUA | <i>Minuartia</i> | Stitchwort |
| MIRO4 | <i>Minuartia rossii</i> | Ross' sandwort |
| MIYU | <i>Minuartia yukonensis</i> | Yukon stitchwort |
| MOLA6 | <i>Moehringia lateriflora</i> | Bluntleaf sandwort |
| MOUN2 | <i>Moneses uniflora</i> | Single delight |
| MYAS2 | <i>Myosotis asiatica</i> | Asian forget-me-not |
| MYGA | <i>Myrica gale</i> | Sweetgale |
| NEAR60 | <i>Nephroma arcticum</i> | Arctic kidney lichen |
| NEEX2 | <i>Nephroma expallidum</i> | Kidney lichen |
| NEPHR3 | <i>Nephroma</i> | Kidney lichen |
| OCUP60 | <i>Ochrolechia upsaliensis</i> | Upsala crabseye lichen |
| OPLA4 | <i>Ophioparma lapponica</i> | Ophioparma lichen |
| ORSE | <i>Orthilia secunda</i> | Sidebells wintergreen |
| OXAR2 | <i>Oxytropis arctica</i> | Arctic locoweed |
| OXDE2 | <i>Oxytropis deflexa</i> | Nodding locoweed |
| OXDEF | <i>Oxytropis deflexa</i> var. <i>foliolosa</i> | Nodding locoweed |
| OXDI3 | <i>Oxyria digyna</i> | Alpine mountainsorrel |
| OXNI | <i>Oxytropis nigrescens</i> | Blackish oxytrope |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|--|-------------------------------|
| OXSC | <i>Oxytropis scammaniana</i> | Scamman's oxytrope |
| OXYTR | <i>Oxytropis</i> | Locoweed |
| PAFI3 | <i>Parnassia fimbriata</i> | Fringed grass of Parnassus |
| PAHY5 | <i>Packera hyperborealis</i> | Northern groundsel |
| PAK03 | <i>Parnassia kotzebuei</i> | Kotzebue's grass of Parnassus |
| PALA9 | <i>Papaver lapponicum</i> | Lapland poppy |
| PAMA5 | <i>Papaver macounii</i> | Macoun's poppy |
| PAMC | <i>Papaver mcconnellii</i> | McConnell's poppy |
| PANU5 | <i>Parrya nudicaulis</i> | Nakedstem wallflower |
| PAPA8 | <i>Parnassia palustris</i> | Marsh grass of Parnassus |
| PAPAV | <i>Papaver</i> | Poppy |
| PARA11 | <i>Papaver radicatum</i> | Rooted poppy |
| PARAA | <i>Papaver radicatum ssp. alaskanum</i> | Rooted poppy |
| PASU63 | <i>Parmelia sulcata</i> | Shield lichen |
| PEAP60 | <i>Peltigera aphthosa</i> | Felt lichen |
| PECA2 | <i>Pedicularis capitata</i> | Capitate lousewort |
| PECA60 | <i>Peltigera canina</i> | Felt lichen |
| PEDI60 | <i>Peltigera didactyla</i> | Felt lichen |
| PEDIC | <i>Pedicularis</i> | Lousewort |
| PEFL15 | <i>Pentaphylloides floribunda</i> | Shrubby cinquefoil |
| PEFL15 | <i>Pentaphylloides floribunda</i> | Shrubby cinquefoil |
| PEFR5 | <i>Petasites frigidus</i> | Arctic sweet coltsfoot |
| PEFRF | <i>Petasites frigidus var. frigidus</i> | Arctic sweet coltsfoot |
| PEGO | <i>Penstemon gormanii</i> | Gorman's beardtongue |
| PEGR2 | <i>Pedicularis groenlandica</i> | Elephanthead lousewort |
| PELA | <i>Pedicularis labradorica</i> | Labrador lousewort |
| PELA14 | <i>Pedicularis lanata</i> | Wooly lousewort |
| PELA3 | <i>Pedicularis langsдорфii</i> | Langsdorf's lousewort |
| PELA4 | <i>Pedicularis lapponica</i> | Lapland lousewort |
| PELTI2 | <i>Peltigera</i> | Felt lichen |
| PEOE | <i>Pedicularis oederi</i> | Oeder's lousewort |
| PESU | <i>Pedicularis sudetica</i> | Sudetic lousewort |
| PEVE | <i>Pedicularis verticillata</i> | Whorled lousewort |
| PHFO6 | <i>Philonotis fontana</i> | Philonotis moss |
| PIGL | <i>Picea glauca</i> | White spruce |
| PIMA | <i>Picea mariana</i> | Black spruce |
| PIVI | <i>Pinguicula villosa</i> | Hairy butterwort |
| PLEUR10 | <i>Pleurozium</i> | Big red stem moss |
| PLHY2 | <i>Platanthera hyperborea</i> | Northern green orchid |
| PLMA2 | <i>Plantago major</i> | Common plantain |
| PLOB | <i>Platanthera obtusata</i> | Bluntleaved orchid |
| PLOB02 | <i>Platanthera obtusata ssp. oligantha</i> | Bluntleaved orchid |
| PLSC70 | <i>Pleurozium schreberi</i> | Schreber's big red stem moss |
| POA | <i>Poa</i> | Bluegrass |
| POAC | <i>Polemonium acutiflorum</i> | Tall Jacob's-ladder |
| POAL11 | <i>Polygonum alpinum</i> | Alaska wild rhubarb |
| POAL2 | <i>Poa alpina</i> | Alpine bluegrass |
| POAR2 | <i>Poa arctica</i> | Arctic bluegrass |
| POARA2 | <i>Poa arctica ssp. arctica</i> | Arctic bluegrass |
| POBA2 | <i>Populus balsamifera</i> | Balsam poplar |
| POBI5 | <i>Polygonum bistorta</i> | Meadow bistort |
| POBI8 | <i>Potentilla biflora</i> | Twoflower cinquefoil |
| POBO2 | <i>Polemonium boreale</i> | Northern Jacob's-ladder |
| POCO38 | <i>Polytrichum commune</i> | Polytrichum moss |
| POGL | <i>Poa glauca</i> | Glaucous bluegrass |
| POGR9 | <i>Potentilla gracilis</i> | Slender cinquefoil |
| POHLI2 | <i>Pohlia</i> | Pohlia moss |
| POJU70 | <i>Polytrichum juniperinum</i> | Juniper polytrichum moss |
| POLEM | <i>Polemonium</i> | Jacob's-ladder |
| POLYG4 | <i>Polygonum</i> | Knotweed |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|--|---------------------------|
| POLYT5 | <i>Polytrichum</i> | Polytrichum moss |
| POMA18 | <i>Podistera macounii</i> | Macoun's woodroot |
| PONI2 | <i>Potentilla nivea</i> | Snow cinquefoil |
| PONO3 | <i>Potentilla norvegica</i> | Norwegian cinquefoil |
| PONU70 | <i>Pohlia nutans</i> | Pohlia moss |
| POPA2 | <i>Poa palustris</i> | Fowl bluegrass |
| POPE8 | <i>Potentilla pensylvanica</i> | Pennsylvania cinquefoil |
| POPI10 | <i>Polytrichum piliferum</i> | Polytrichum moss |
| POPO9 | <i>Poa porsildii</i> | Porsild's bluegrass |
| POPR | <i>Poa pratensis</i> | Kentucky bluegrass |
| POPRA6 | <i>Poa pratensis ssp. alpigena</i> | Kentucky bluegrass |
| PORPI2 | <i>Porpidia</i> | Porpidai lichen |
| PORU3 | <i>Potentilla rubricaulis</i> | rocky Mountain cinquefoil |
| POST70 | <i>Polytrichum strictum</i> | Polytrichum moss |
| POTEN | <i>Potentilla</i> | Cinquefoil |
| POTR5 | <i>Populus tremuloides</i> | Quaking aspen |
| POVI3 | <i>Polygonum viviparum</i> | Alpine bistort |
| PREG | <i>Primula egaliksensis</i> | Greenland primrose |
| PRQU2 | <i>Preissia quadrata</i> | Preissia quadrata |
| PRTS | <i>Primula tschuktschorum</i> | Chukchi primrose |
| PSDE60 | <i>Psora decipiens</i> | Fishscale lichen |
| PSEUD33 | <i>Pseudephebe</i> | Blackcurly lichen |
| PSPU60 | <i>Pseudephebe pubescens</i> | Blackcurly lichen |
| PSSP6 | <i>Pseudoroegneria spicata</i> | Bluebunch wheatgrass |
| PSSPS | <i>Pseudoroegneria spicata ssp. spicata</i> | Bluebunch wheatgrass |
| PTCR70 | <i>Ptilium crista-castrensis</i> | Knights plume moss |
| PUPA5 | <i>Pulsatilla patens</i> | American pasqueflower |
| PYAS | <i>Pyrola asarifolia</i> | Liverleaf wintergreen |
| PYCH | <i>Pyrola chlorantha</i> | Greenflowered wintergreen |
| PYGR | <i>Pyrola grandiflora</i> | Largeflowered wintergreen |
| PYMI | <i>Pyrola minor</i> | Snowline wintergreen |
| PYROL | <i>Pyrola</i> | Wintergreen |
| RAES | <i>Ranunculus eschscholtzii</i> | Eschscholtz's buttercup |
| RAGM | <i>Ranunculus gmelinii</i> | Gmelin's buttercup |
| RALA | <i>Ranunculus lapponicus</i> | Lapland buttercup |
| RAMA2 | <i>Ranunculus macounii</i> | Macoun's buttercup |
| RANUN | <i>Ranunculus</i> | Buttercup |
| RHGE2 | <i>Rhizocarpon geminatum</i> | Map lichen |
| RHGR5 | <i>Rhizomnium gracile</i> | Rhizomnium moss |
| RHINI | <i>Rhodiola integrifolia ssp. integrifolia</i> | Ledge stonecrop |
| RHIZO2 | <i>Rhizomnium</i> | Rhizomnium moss |
| RHIZO3 | <i>Rhizocarpon</i> | Map lichen |
| RHLA2 | <i>Rhododendron lapponicum</i> | Lapland rosebay |
| RHRU70 | <i>Rhytidium rugosum</i> | Rhytidium moss |
| RHTR70 | <i>Rhytidiadelphus triquetrus</i> | Rough goose neck moss |
| RHYTI4 | <i>Rhytidium</i> | Rhytidium moss |
| RIBES | <i>Ribes</i> | Currant |
| RIGL | <i>Ribes glandulosum</i> | Skunk currant |
| RIHU | <i>Ribes hudsonianum</i> | Northern black currant |
| RILA | <i>Ribes lacustre</i> | Prickly currant |
| RITR | <i>Ribes triste</i> | Red currant |
| ROAC | <i>Rosa acicularis</i> | Prickly rose |
| ROBA | <i>Rorippa barbareifolia</i> | Hoary yellowcress |
| ROPA2 | <i>Rorippa palustris</i> | Bog yellowcress |
| RORIP | <i>Rorippa</i> | Yellowcress |
| RUAQ | <i>Rumex aquaticus</i> | Western dock |
| RUAQF | <i>Rumex aquaticus var. fenestratus</i> | Western dock |
| RUAR | <i>Rubus arcticus</i> | Arctic blackberry |
| RUAR6 | <i>Rumex arcticus</i> | Arctic dock |
| RUARA2 | <i>Rubus arcticus ssp. acaulis</i> | Dwarf raspberry |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|--|---------------------------|
| RUCH | <i>Rubus chamaemorus</i> | Cloudberry |
| RUID | <i>Rubus idaeus</i> | American red raspberry |
| RUMEX | <i>Rumex</i> | Dock |
| SAAL | <i>Salix alaxensis</i> | Feltleaf willow |
| SAALA | <i>Salix alaxensis</i> var. <i>alaxensis</i> | Feltleaf willow |
| SAALL | <i>Salix alaxensis</i> var. <i>longistylis</i> | Feltleaf willow |
| SAAN3 | <i>Saussurea angustifolia</i> | Narrowleaf saw-wort |
| SAANA3 | <i>Saussurea angustifolia</i> var. <i>angustifolia</i> | Narrowleaf saw-wort |
| SAANY | <i>Saussurea angustifolia</i> var. <i>yukonensis</i> | Narrowleaf saw-wort |
| SAAR27 | <i>Salix arctica</i> | Arctic willow |
| SAAR3 | <i>Salix arbusculoides</i> | Littletree willow |
| SABA4 | <i>Salix barrattiana</i> | Barratt's willow |
| SABE2 | <i>Salix bebbiana</i> | Bebb willow |
| SABR6 | <i>Saxifraga bronchialis</i> | Yellowdot saxifrage |
| SACA4 | <i>Salix candida</i> | Sageleaf willow |
| SACA50 | <i>Saxifraga caespitosa</i> | Tufted alpine saxifrage |
| SACH | <i>Salix chamissonis</i> | Chamisso's willow |
| SAFL6 | <i>Saxifraga flagellaris</i> | Whiplash saxifrage |
| SAFU | <i>Salix fuscescens</i> | Alaska bog willow |
| SAGL | <i>Salix glauca</i> | Grayleaf willow |
| SAHA | <i>Salix hastata</i> | Halberd willow |
| SAHI3 | <i>Saxifraga hirculus</i> | Yellow marsh saxifrage |
| SAHI5 | <i>Saxifraga hieraciifolia</i> | Stiffstem saxifrage |
| SAIN3 | <i>Salix interior</i> | Sandbar willow |
| SALIX | <i>Salix</i> | Willow |
| SALU | <i>Salix lucida</i> | Shining willow |
| SALUL | <i>Salix lucida</i> ssp. <i>lasiandra</i> | Pacific willow |
| SAMY | <i>Salix myrtilifolia</i> | Blueberry willow |
| SANE3 | <i>Saxifraga nelsoniana</i> | Heartleaf saxifrage |
| SANEP2 | <i>Saxifraga nelsoniana</i> ssp. <i>porsildiana</i> | Porsild's saxifrage |
| SANGU2 | <i>Sanguisorba</i> | Burnet |
| SANI10 | <i>Salix niphoclada</i> | Barrenground willow |
| SAOF3 | <i>Sanguisorba officinalis</i> | Official burnet |
| SAOP | <i>Saxifraga oppositifolia</i> | Purple mountain saxifrage |
| SAPH | <i>Salix phlebophylla</i> | Skeletonleaf willow |
| SAPO | <i>Salix polaris</i> | Polar willow |
| SAPS | <i>Salix pseudomonticola</i> | False mountain willow |
| SAPS8 | <i>Salix pseudomyrsinites</i> | Firmleaf willow |
| SAPU15 | <i>Salix pulchra</i> | Tealeaf willow |
| SARA7 | <i>Saxifraga razshivinii</i> | Alaska saxifrage |
| SARE2 | <i>Salix reticulata</i> | Netleaf willow |
| SARE8 | <i>Saxifraga reflexa</i> | Reflexed saxifrage |
| SARI4 | <i>Salix richardsonii</i> | Richardson's willow |
| SARI8 | <i>Saxifraga rivularis</i> | Weak saxifrage |
| SARO2 | <i>Salix rotundifolia</i> | Least willow |
| SASC | <i>Salix scouleriana</i> | Scouler's willow |
| SASE7 | <i>Saxifraga serpyllifolia</i> | Thymeleaf saxifrage |
| SASP4 | <i>Saxifraga spicata</i> | Spiked saxifrage |
| SATR5 | <i>Saxifraga tricuspidata</i> | Three toothed saxifrage |
| SAUN8 | <i>Sanionia uncinata</i> | Sanionia moss |
| SAXIF | <i>Saxifraga</i> | Saxifrage |
| SCGA | <i>Scutellaria galericulata</i> | Marsh skullcap |
| SCMI2 | <i>Scirpus microcarpus</i> | Panicled bulrush |
| SELU | <i>Senecio lugens</i> | Small blacktip ragwort |
| SENEC | <i>Senecio</i> | Ragwort |
| SESI | <i>Selaginella sibirica</i> | Siberian spikemoss |
| SHCA | <i>Shepherdia canadensis</i> | Russet buffaloberry |
| SIAC | <i>Silene acaulis</i> | Moss campion |
| SIIN4 | <i>Silene involucreta</i> | Arctic catchfly |
| SILEN | <i>Silene</i> | Catchfly |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|---|--------------------------|
| SIME | <i>Silene menziesii</i> | Menzies' campion |
| SIMEW | <i>Silene menziesii</i> ssp. <i>williamsii</i> | Menzies' campion |
| SIFR | <i>Sibbaldia procumbens</i> | Creeping sibbaldia |
| SIRE3 | <i>Silene repens</i> | Pink campion |
| SOC46 | <i>Solidago canadensis</i> | Canada goldenrod |
| SOCR60 | <i>Solorina crocea</i> | Chocolate chip lichen |
| SOLID | <i>Solidago</i> | Goldenrod |
| SOMU | <i>Solidago multiradiata</i> | rocky Mountain goldenrod |
| SOMUM | <i>Solidago multiradiata</i> var. <i>multiradiata</i> | rocky Mountain goldenrod |
| SOMUS | <i>Solidago multiradiata</i> var. <i>scopulorum</i> | Manyray goldenrod |
| SOSI3 | <i>Solidago simplex</i> | Mt. Albert goldenrod |
| SPAN11 | <i>Sphagnum angustifolium</i> | Sphagnum |
| SPFU70 | <i>Sphagnum fuscum</i> | Sphagnum |
| SPGI70 | <i>Sphagnum girgensohnii</i> | Girgensohn's sphagnum |
| SPHAG2 | <i>Sphagnum</i> | Shagnum moss |
| SPLU7 | <i>Splachnum luteum</i> | Yellow moosedung moss |
| SPMA70 | <i>Sphagnum magellanicum</i> | Magellan's sphagnum |
| SPRO | <i>Spiranthes romanzoffiana</i> | Hooded ladies'-tresses |
| SPST3 | <i>Spiraea stevenii</i> | Beauverd spirea |
| SPWA70 | <i>Sphagnum warnstorffii</i> | Warnstorff's sphagnum |
| STAL3 | <i>Stellaria alaskana</i> | Alaska starwort |
| STCA | <i>Stellaria calycantha</i> | Northern starwort |
| STCR | <i>Stellaria crassifolia</i> | Fleshy starwort |
| STELL | <i>Stellaria</i> | Starwort |
| STERE2 | <i>Stereocaulon</i> | Snow lichen |
| STLO | <i>Stellaria longifolia</i> | Longleaf starwort |
| STLO2 | <i>Stellaria longipes</i> | Longstalk starwort |
| STME2 | <i>Stellaria media</i> | Common chickweed |
| STTO60 | <i>Stereocaulon tomentosum</i> | Tomentose snow lichen |
| SYBO | <i>Synthyris borealis</i> | Northern kittentails |
| SYFA | <i>Symphyotrichum falcatum</i> | White prairie aster |
| SYFAF | <i>Symphyotrichum falcatum</i> var. <i>falcatum</i> | White prairie aster |
| TABI | <i>Tanacetum bipinnatum</i> | Lake Huron tansy |
| TABIH | <i>Tanacetum bipinnatum</i> ssp. <i>huronense</i> | Lake Huron tansy |
| TALY | <i>Taraxacum lyratum</i> | Harp dandelion |
| TEAT2 | <i>Tephrosieris atropurpurea</i> | Arctic groundsel |
| THAL | <i>Thalictrum alpinum</i> | Alpine meadow-rue |
| THALI2 | <i>Thalictrum</i> | Meadow-rue |
| THAMN3 | <i>Thamnia</i> | Whiteworm lichen |
| THOC | <i>Thalictrum occidentale</i> | Western meadow-rue |
| THSP | <i>Thalictrum sparsiflorum</i> | Fewflower meadow-rue |
| THSU60 | <i>Thamnia subuliformis</i> | Whiteworm lichen |
| TOCO | <i>Tofieldia coccinea</i> | Northern asphodel |
| TOFIE | <i>Tofieldia</i> | Tofieldia |
| TONI70 | <i>Tomentypnum nitens</i> | Tomentypnum moss |
| TONI70 | <i>Tomentypnum nitens</i> | Tomentypnum moss |
| TONIN | <i>Toninia</i> | Bruised lichen |
| TOPU | <i>Tofieldia pusilla</i> | Scotch false asphodel |
| TORTU | <i>Tortula</i> | Tortula moss |
| TRAT3 | <i>Tremolecia atrata</i> | Disc lichen |
| TRCA30 | <i>Trichophorum caespitosum</i> | Tufted bulrush |
| TREMO | <i>Tremolecia</i> | Disc lichen |
| TRIGL | <i>Triglochin</i> | Arrowgrass |
| TRMA4 | <i>Triglochin maritimum</i> | Seaside arrowgrass |
| TRSP2 | <i>Trisetum spicatum</i> | Spike trisetum |
| UMBIL2 | <i>Umbilicaria</i> | Navel lichen |
| USNEA2 | <i>Usnea</i> | Beard lichen |
| VACA3 | <i>Valeriana capitata</i> | Captiate valerian |
| VAOX | <i>Vaccinium oxycoccos</i> | Small cranberry |
| VAUL | <i>Vaccinium uliginosum</i> | Bog blueberry |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 6.--Plants in the Survey Area--Continued

| Plant symbol | Scientific name | Common name |
|--------------|----------------------------------|---------------------------|
| VAVI | <i>Vaccinium vitis-idaea</i> | Lingonberry |
| VEWO2 | <i>Veronica wormskjoldii</i> | American alpine speedwell |
| VIED | <i>Viburnum edule</i> | Squashberry |
| VIEP | <i>Viola epipsila</i> | Dwarf marsh violet |
| VIOLA | <i>Viola</i> | Violet |
| VUPI | <i>Vulpicida pinastri</i> | Pin lichen |
| VUTI | <i>Vulpicida tilesii</i> | Tile lichen |
| WIPH | <i>Wilhelmsia physodes</i> | Merckia |
| WOAL | <i>Woodsia alpina</i> | Alpine woodsia |
| WOGL | <i>Woodsia glabella</i> | Smooth woodsia |
| XANTH7 | <i>Xanthoparmelia</i> | Xanthoparmelia lichen |
| XASO2 | <i>Xanthoparmelia somloensis</i> | Vestergrenopsis lichen |
| ZIEL2 | <i>Zigadenus elegans</i> | Mountain deathcamas |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties

(Absence of an entry indicates that data were not estimated.)

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|--|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31BH1: D31-Boreal forest rocky colluvial slopes----- | 0-8 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 8-14 | Gravelly loam, silt loam | ML | A-4 | 0-4 | 0-11 | 70-95 | 68-95 | 61-95 | 42-86 | 0-48 | NP-7 |
| | 14-42 | Extremely cobbly sandy loam, very cobbly silt loam, very cobbly loam | GC-GM | A-2-4 | 0-10 | 5-32 | 38-60 | 35-59 | 29-59 | 18-43 | 0-39 | NP-9 |
| | 42-152 | Very gravelly silt loam, extremely gravelly coarse sandy loam | GP-GM | A-1-a | 0-15 | 12-32 | 12-61 | 8-59 | 5-52 | 3-32 | 0-44 | NP-9 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 0-4 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 4-10 | Very stony loam, silt, stony silt loam | ML | A-4 | 0-14 | 0-13 | 43-89 | 41-89 | 36-89 | 25-78 | 0-50 | NP-9 |
| | 10-41 | Extremely gravelly sandy loam, very gravelly silt loam, very gravelly loam | GC-GM | A-2-4 | 0-12 | 10-26 | 28-59 | 24-58 | 20-56 | 11-38 | 0-39 | NP-8 |
| | 41-152 | Very gravelly sandy loam, extremely gravelly sandy loam | GP-GM | A-1-a | 0-10 | 15-33 | 11-43 | 7-41 | 5-35 | 2-22 | 0-43 | NP-9 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-28 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 89-100 | 88-100 | 79-100 | 61-96 | 0-47 | NP-6 |
| | 28-53 | Cobbly sandy loam, silt loam | CL-ML | A-4 | 0 | 0-9 | 80-94 | 79-93 | 68-93 | 45-82 | 0-44 | NP-9 |
| | 53-152 | Permanently frozen sandy loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0-2 | 80-93 | 79-93 | 70-93 | 53-87 | 0-40 | NP-6 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 0-4 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 4-10 | Very stony loam, silt, stony silt loam | ML | A-4 | 0-14 | 0-13 | 43-89 | 41-89 | 36-89 | 25-78 | 0-50 | NP-9 |
| | 10-41 | Extremely gravelly sandy loam, very gravelly silt loam, very gravelly loam | GC-GM | A-2-4 | 0-12 | 10-26 | 28-59 | 24-58 | 20-56 | 11-38 | 0-39 | NP-8 |
| | 41-152 | Very gravelly sandy loam, extremely gravelly sandy loam | GP-GM | A-1-a | 0-10 | 15-33 | 11-43 | 7-41 | 5-35 | 2-22 | 0-43 | NP-9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|--|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31BH2: D31-Boreal forest rocky colluvial escarpments----- | 0-4 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 4-10 | Extremely flaggy sandy loam, flaggy silt loam, very flaggy sandy loam | GM | A-4 | 5-24 | 14-43 | 47-78 | 46-77 | 36-75 | 22-52 | 0-49 | NP-8 |
| | 10-43 | Extremely flaggy sandy loam, very flaggy silt loam, extremely flaggy loam | GM | A-1-b | 8-24 | 26-43 | 19-70 | 17-70 | 13-65 | 8-46 | 0-39 | NP-8 |
| | 43-152 | Channers, very channery silt loam, extremely channery sandy loam | GP-GM | A-1-a | 18-22 | 34-45 | 9-59 | 7-58 | 5-48 | 3-33 | 0-43 | NP-8 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-28 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 89-100 | 88-100 | 79-100 | 61-96 | 0-47 | NP-6 |
| | 28-53 | Cobbly sandy loam, silt loam | CL-ML | A-4 | 0 | 0-9 | 80-94 | 79-93 | 68-93 | 45-82 | 0-44 | NP-9 |
| | 53-152 | Permanently frozen sandy loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0-2 | 80-93 | 79-93 | 70-93 | 53-87 | 0-40 | NP-6 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-48 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 88-100 | 87-100 | 79-100 | 59-97 | 0-44 | NP-9 |
| | 48-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 96-100 | 96-100 | 87-100 | 67-97 | 0-44 | NP-9 |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-54 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 65-91 | 0-44 | NP-9 |
| | 54-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 88-100 | 65-91 | 0-44 | NP-9 |
| D31-Boreal forest loamy high flood plains----- | 0-13 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 13-18 | Silt loam, sandy loam | ML | A-4 | 0 | 0 | 80-100 | 79-100 | 64-97 | 35-61 | 0-45 | NP-4 |
| | 18-152 | Stratified extremely gravelly loamy sand to very gravelly sandy loam, stratified loamy coarse sand to gravelly sandy loam, stratified very gravelly loamy coarse sand to gravelly sandy loam | GM | A-1-b | 0-12 | 3-19 | 40-80 | 37-79 | 23-61 | 9-29 | 0-26 | NP-4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|--|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31BH5: D31-Boreal scrub rocky drainages----- | 0-4 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 4-14 | Stratified fine sandy loam to silt loam, stratified sandy loam to silt loam | ML | A-4 | 0 | 0-20 | 73-100 | 72-100 | 59-100 | 34-67 | 0-50 | NP-9 |
| | 14-152 | Stratified very gravelly loamy fine sand to gravelly sandy loam, stratified very gravelly loamy sand to very gravelly sandy loam | GM | A-1-b | 0-10 | 2-19 | 39-68 | 37-67 | 25-57 | 12-33 | 0-32 | NP-10 |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 0-14 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 14-22 | Very cobbly sandy loam, silt loam, cobbly sandy loam | SM | A-4 | 2-9 | 4-18 | 38-83 | 35-83 | 28-83 | 16-58 | 0-50 | NP-9 |
| | 22-152 | Cobbles, extremely cobbly silt loam, extremely cobbly coarse sandy loam | GP-GM | A-1-a | 0 | 21-43 | 11-38 | 7-36 | 5-32 | 3-21 | 0-44 | NP-9 |
| D31-Boreal rubble land----- | 0-55 | Extremely cobbly sandy loam, cobbles, extremely cobbly silt loam | GM | A-1-a | 1-15 | 31-41 | 6-44 | 2-41 | 1-39 | 1-23 | 0-26 | NP-2 |
| | 55-152 | Bedrock | | | --- | --- | --- | --- | --- | --- | --- | --- |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes----- | 0-4 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 4-8 | Very cobbly sandy loam, cobbly silt loam | GM | A-4 | 0-4 | 18-35 | 44-79 | 42-78 | 38-78 | 27-67 | 0-45 | NP-4 |
| | 8-27 | Cobbles, extremely cobbly silt loam, extremely cobbly sandy loam | | | 0-5 | 20-51 | 8-38 | 4-35 | 3-32 | 2-21 | 0-34 | NP-4 |
| | 27-152 | Extremely cobbly silt loam, cobbles | | | 0-9 | 40-53 | 4-17 | 0-13 | 0-12 | 0-9 | 0-29 | NP-4 |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 8-14 | Gravelly loam, silt loam | ML | A-4 | 0-4 | 0-11 | 70-95 | 68-95 | 61-95 | 42-86 | 0-48 | NP-7 |
| | 14-42 | Extremely cobbly sandy loam, very cobbly silt loam, very cobbly loam | GC-GM | A-2-4 | 0-10 | 5-32 | 38-60 | 35-59 | 29-59 | 18-43 | 0-39 | NP-9 |
| | 42-152 | Very gravelly silt loam, extremely gravelly coarse sandy loam | GP-GM | A-1-a | 0-15 | 12-32 | 12-61 | 8-59 | 5-52 | 3-32 | 0-44 | NP-9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|--------|---|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31BH7: D31-Boreal forest gravelly colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-26 | Very cobbly sandy loam, silt, silt loam | ML | A-4 | 0-3 | 0-24 | 48-100 | 46-100 | 41-100 | 31-90 | 0-43 | NP-3 |
| | 26-58 | Extremely gravelly sandy loam, gravelly silt loam, very gravelly fine sandy loam | GM | A-1-b | 0-18 | 0-19 | 27-63 | 24-62 | 19-61 | 11-40 | 0-40 | NP-6 |
| | 58-152 | Permanently frozen very stony silt loam, permanently frozen extremely stony sandy loam | GM | A-1-b | 4-18 | 8-20 | 13-64 | 10-63 | 7-62 | 4-38 | 0-36 | NP-3 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-26 | Very cobbly sandy loam, silt, silt loam | ML | A-4 | 0-3 | 0-24 | 48-100 | 46-100 | 41-100 | 31-90 | 0-43 | NP-3 |
| | 26-58 | Extremely gravelly sandy loam, gravelly silt loam, very gravelly fine sandy loam | GM | A-1-b | 0-18 | 0-19 | 27-63 | 24-62 | 19-61 | 11-40 | 0-40 | NP-6 |
| | 58-152 | Permanently frozen very stony silt loam, permanently frozen extremely stony sandy loam | GM | A-1-b | 4-18 | 8-20 | 13-64 | 10-63 | 7-62 | 4-38 | 0-36 | NP-3 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 0-25 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 25-50 | Very gravelly loam, gravelly silt loam | GM | A-2-4 | 0-7 | 0-22 | 41-75 | 38-74 | 33-74 | 22-62 | 0-40 | NP-6 |
| | 50-152 | Permanently frozen extremely gravelly sandy loam, permanently frozen very gravelly silt loam, permanently frozen very gravelly sandy loam | GM | A-1-b | 0-1 | 0-19 | 30-54 | 27-52 | 20-48 | 12-33 | 0-40 | NP-6 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|---|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31CF1: D31-Subalpine woodland silty colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-30 | Gravelly loam, silt, silt loam | ML | A-4 | 0-5 | 0-15 | 70-91 | 69-90 | 59-90 | 45-73 | 0-45 | NP-4 |
| | 30-64 | Very gravelly sandy loam, gravelly silt loam, gravelly sandy loam | GM | A-2-4 | 0-11 | 0-12 | 59-78 | 57-77 | 43-70 | 25-47 | 0-38 | NP-4 |
| | 64-152 | Permanently frozen gravelly sandy loam, permanently frozen very gravelly sandy loam | GM | A-1-b | 0-6 | 0-10 | 40-62 | 37-60 | 25-50 | 12-30 | 0-29 | NP-4 |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-28 | Gravelly loam, silt, silt loam | ML | A-4 | 0-6 | 0-1 | 71-100 | 70-100 | 62-100 | 44-94 | 0-50 | NP-9 |
| | 28-60 | Gravelly loam, silt loam | ML | A-4 | 0-5 | 0-9 | 73-91 | 72-91 | 61-91 | 41-80 | 0-44 | NP-9 |
| | 60-152 | Permanently frozen gravelly loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0-5 | 0-6 | 73-90 | 72-89 | 63-89 | 45-84 | 0-44 | NP-9 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-48 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 88-100 | 87-100 | 79-100 | 59-97 | 0-44 | NP-9 |
| | 48-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 96-100 | 96-100 | 87-100 | 67-97 | 0-44 | NP-9 |
| | | | | | | | | | | | | |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-28 | Gravelly loam, silt, silt loam | ML | A-4 | 0-6 | 0-1 | 71-100 | 70-100 | 62-100 | 44-94 | 0-50 | NP-9 |
| | 28-60 | Gravelly loam, silt loam | ML | A-4 | 0-5 | 0-9 | 73-91 | 72-91 | 61-91 | 41-80 | 0-44 | NP-9 |
| | 60-152 | Permanently frozen gravelly loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0-5 | 0-6 | 73-90 | 72-89 | 63-89 | 45-84 | 0-44 | NP-9 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-48 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 88-100 | 87-100 | 79-100 | 59-97 | 0-44 | NP-9 |
| | 48-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 96-100 | 96-100 | 87-100 | 67-97 | 0-44 | NP-9 |
| | | | | | | | | | | | | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|---|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31KT1: | | | | | | | | | | | | |
| D31-Boreal taiga organic eolian slopes, frozen----- | | | | | | | | | | | | |
| | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-48 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 88-100 | 87-100 | 79-100 | 59-97 | 0-44 | NP-9 |
| | 48-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 96-100 | 96-100 | 87-100 | 67-97 | 0-44 | NP-9 |
| D31LB1: | | | | | | | | | | | | |
| D31-Boreal taiga silty eolian slopes, frozen----- | | | | | | | | | | | | |
| | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-28 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 89-100 | 88-100 | 79-100 | 61-96 | 0-47 | NP-6 |
| | 28-53 | Cobbly sandy loam, silt loam | CL-ML | A-4 | 0 | 0-9 | 80-94 | 79-93 | 68-93 | 45-82 | 0-44 | NP-9 |
| | 53-152 | Permanently frozen sandy loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0-2 | 80-93 | 79-93 | 70-93 | 53-87 | 0-40 | NP-6 |
| D31-Boreal taiga organic eolian slopes, frozen----- | | | | | | | | | | | | |
| | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-48 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 88-100 | 87-100 | 79-100 | 59-97 | 0-44 | NP-9 |
| | 48-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 96-100 | 96-100 | 87-100 | 67-97 | 0-44 | NP-9 |
| D31-Boreal forest rocky colluvial slopes----- | | | | | | | | | | | | |
| | 0-8 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 8-14 | Gravelly loam, silt loam | ML | A-4 | 0-4 | 0-11 | 70-95 | 68-95 | 61-95 | 42-86 | 0-48 | NP-7 |
| | 14-42 | Extremely cobbly sandy loam, very cobbly silt loam, very cobbly loam | GC-GM | A-2-4 | 0-10 | 5-32 | 38-60 | 35-59 | 29-59 | 18-43 | 0-39 | NP-9 |
| | 42-152 | Very gravelly silt loam, extremely gravelly coarse sandy loam | GP-GM | A-1-a | 0-15 | 12-32 | 12-61 | 8-59 | 5-52 | 3-32 | 0-44 | NP-9 |
| D31LB2: | | | | | | | | | | | | |
| D31-Boreal taiga silty colluvial slopes, frozen----- | | | | | | | | | | | | |
| | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-28 | Gravelly loam, silt, silt loam | ML | A-4 | 0-6 | 0-1 | 71-100 | 70-100 | 62-100 | 44-94 | 0-50 | NP-9 |
| | 28-60 | Gravelly loam, silt loam | ML | A-4 | 0-5 | 0-9 | 73-91 | 72-91 | 61-91 | 41-80 | 0-44 | NP-9 |
| | 60-152 | Permanently frozen gravelly loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0-5 | 0-6 | 73-90 | 72-89 | 63-89 | 45-84 | 0-44 | NP-9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|--------|--|----------------|--------|------------|--------------|--------------------------------------|-------|-------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31LB2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 0-4 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 4-10 | Very stony loam, silt, stony silt loam | ML | A-4 | 0-14 | 0-13 | 43-89 | 41-89 | 36-89 | 25-78 | 0-50 | NP-9 |
| | 10-41 | Extremely gravelly sandy loam, very gravelly silt loam, very gravelly loam | GC-GM | A-2-4 | 0-12 | 10-26 | 28-59 | 24-58 | 20-56 | 11-38 | 0-39 | NP-8 |
| | 41-152 | Very gravelly sandy loam, extremely gravelly sandy loam | GP-GM | A-1-a | 0-10 | 15-33 | 11-43 | 7-41 | 5-35 | 2-22 | 0-43 | NP-9 |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 8-14 | Gravelly loam, silt loam | ML | A-4 | 0-4 | 0-11 | 70-95 | 68-95 | 61-95 | 42-86 | 0-48 | NP-7 |
| | 14-42 | Extremely cobbly sandy loam, very cobbly silt loam, very cobbly loam | GC-GM | A-2-4 | 0-10 | 5-32 | 38-60 | 35-59 | 29-59 | 18-43 | 0-39 | NP-9 |
| | 42-152 | Very gravelly silt loam, extremely gravelly coarse sandy loam | GP-GM | A-1-a | 0-15 | 12-32 | 12-61 | 8-59 | 5-52 | 3-32 | 0-44 | NP-9 |
| D31MT1: D31-Alpine rubble land----- | 0-152 | Cobbles | | | 1-80 | 8-80 | 4-32 | 0-29 | 0 | 0 | --- | --- |
| D31-Alpine low scrub gravelly colluvial slopes----- | 0-11 | Very stony loam, silt loam, stony silt loam | ML | A-4 | 0-24 | 0-16 | 50-92 | 48-92 | 41-92 | 29-72 | 0-45 | NP-4 |
| | 11-34 | Extremely cobbly sandy loam, very cobbly silt loam, very cobbly coarse sandy loam | GM | A-1-b | 4-23 | 8-36 | 32-68 | 30-66 | 21-58 | 11-35 | 0-34 | NP-4 |
| | 34-152 | Very stony sandy loam, extremely stony coarse sandy loam | GP-GM | A-1-a | 4-22 | 8-34 | 17-52 | 13-50 | 8-39 | 4-21 | 0-38 | NP-4 |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | 0-11 | Very stony loam, silt loam, stony silt loam | ML | A-4 | 0-24 | 0-16 | 50-92 | 48-92 | 41-92 | 29-72 | 0-45 | NP-4 |
| | 11-34 | Extremely cobbly sandy loam, very cobbly silt loam, very cobbly coarse sandy loam | GM | A-1-b | 4-23 | 8-36 | 32-68 | 30-66 | 21-58 | 11-35 | 0-34 | NP-4 |
| | 34-152 | Very stony sandy loam, extremely stony coarse sandy loam | GP-GM | A-1-a | 4-22 | 8-34 | 17-52 | 13-50 | 8-39 | 4-21 | 0-38 | NP-4 |
| D31-Alpine scrub gravelly circles----- | 0-10 | Very gravelly sandy loam, silt loam, gravelly silt loam | GM | A-4 | 0-14 | 0-25 | 49-79 | 47-78 | 41-78 | 30-65 | 0-50 | NP-9 |
| | 10-31 | Gravelly silt loam, very gravelly sandy loam | GC-GM | A-2-4 | 0-19 | 0-20 | 43-73 | 40-72 | 31-69 | 16-43 | 0-39 | NP-9 |
| | 31-152 | Very stony sandy loam, extremely stony fine sandy loam | GM | A-1-b | 0-28 | 0-18 | 21-53 | 18-51 | 14-48 | 7-31 | 0-44 | NP-9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|----------------------------------|---|----------------------|------------------------------|--------------------------|---------------------------|--------------------------------------|---------------------------------|--------------------------------|-------------------------------|-----------------------------|-----------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31MT2: D31-Alpine rubble land----- | 0-152 | Cobbles | | | 1-80 | 8-80 | 4-32 | 0-29 | 0 | 0 | --- | --- |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | 0-44 44-152 | Peat Permanently frozen gravelly loam, permanently frozen silt loam | PT ML | A-8 A-4 | 0 0-3 | 0 0-13 | --- 63-94 | --- 62-94 | --- 54-94 | --- 40-75 | --- 0-38 | --- NP-4 |
| D31-Alpine scrub loamy hummocks, frozen----- | 0-31 31-57 57-152 | Slightly decomposed plant material Very gravelly sandy loam, silt loam, gravelly sandy loam Permanently frozen silt loam, permanently frozen cobbly coarse sandy loam | PT GM SM | A-8 A-2-4 A-4 | 0 0 0-15 | 0 0-21 0-23 | --- 51-86 66-95 | --- 49-86 64-95 | --- 35-76 46-86 | --- 21-52 28-57 | --- 0-38 0-29 | --- NP-4 NP-4 |
| D31-Alpine low scrub loamy solifluction lobes--- | 0-5 5-21 21-152 | Slightly decomposed plant material Very stony sandy loam, silt loam, stony silt loam Extremely cobbly loamy sand, cobbly silt loam, very cobbly loamy coarse sand | PT ML SM | A-8 A-4 A-1-b | 0 4-32 3-23 | 0 0-32 6-42 | --- 65-100 43-79 | --- 64-100 41-78 | --- 58-100 21-51 | --- 42-83 9-24 | --- 0-45 0-26 | --- NP-4 NP-4 |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 0-21 21-26 26-58 58-152 | Slightly decomposed plant material Very cobbly sandy loam, silt, silt loam Extremely gravelly sandy loam, gravelly silt loam, very gravelly fine sandy loam Permanently frozen very stony silt loam, permanently frozen extremely stony sandy loam | PT ML GM GM | A-8 A-4 A-1-b A-1-b | 0 0-3 0-18 4-18 | 0 0-24 0-19 8-20 | --- 48-100 27-63 13-64 | --- 46-100 24-62 10-63 | --- 41-100 19-61 7-62 | --- 31-90 11-40 4-38 | --- 0-43 0-40 0-36 | --- NP-3 NP-6 NP-3 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|--|----------------|--------|------------|--------------|--------------------------------------|-------|-------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31OF1: D31-Boreal woodland silty eolian slopes, frozen----- | 0-25 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 25-50 | Very gravelly loam, gravelly silt loam | GM | A-2-4 | 0-7 | 0-22 | 41-75 | 38-74 | 33-74 | 22-62 | 0-40 | NP-6 |
| | 50-152 | Permanently frozen extremely gravelly sandy loam, permanently frozen very gravelly silt loam, permanently frozen very gravelly sandy loam | GM | A-1-b | 0-1 | 0-19 | 30-54 | 27-52 | 20-48 | 12-33 | 0-40 | NP-6 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 0-4 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 4-10 | Very stony loam, silt, stony silt loam | ML | A-4 | 0-14 | 0-13 | 43-89 | 41-89 | 36-89 | 25-78 | 0-50 | NP-9 |
| | 10-41 | Extremely gravelly sandy loam, very gravelly silt loam, very gravelly loam | GC-GM | A-2-4 | 0-12 | 10-26 | 28-59 | 24-58 | 20-56 | 11-38 | 0-39 | NP-8 |
| | 41-152 | Very gravelly sandy loam, extremely gravelly sandy loam | GP-GM | A-1-a | 0-10 | 15-33 | 11-43 | 7-41 | 5-35 | 2-22 | 0-43 | NP-9 |
| D31OM1: D31-Alpine scrub silty circles----- | 0-11 | Gravelly loam, silt, silt loam | ML | A-4 | 0 | 0 | 61-95 | 59-95 | 53-95 | 39-84 | 0-45 | NP-4 |
| | 11-29 | Gravelly silt loam, very gravelly sandy loam | GM | A-2-4 | 0-6 | 0-15 | 41-70 | 39-69 | 32-67 | 18-44 | 0-45 | NP-4 |
| | 29-152 | Extremely stony sandy loam, stony silt loam, very stony sandy loam | GM | A-1-b | 3-22 | 5-17 | 21-64 | 17-62 | 14-60 | 7-36 | 0-38 | NP-4 |
| D31-Alpine rubble land----- | 0-152 | Cobbles | | | 1-80 | 8-80 | 4-32 | 0-29 | 0 | 0 | --- | --- |
| D31OM2: D31-Alpine scrub silty circles----- | 0-11 | Gravelly loam, silt, silt loam | ML | A-4 | 0 | 0 | 61-95 | 59-95 | 53-95 | 39-84 | 0-45 | NP-4 |
| | 11-29 | Gravelly silt loam, very gravelly sandy loam | GM | A-2-4 | 0-6 | 0-15 | 41-70 | 39-69 | 32-67 | 18-44 | 0-45 | NP-4 |
| | 29-152 | Extremely stony sandy loam, stony silt loam, very stony sandy loam | GM | A-1-b | 3-22 | 5-17 | 21-64 | 17-62 | 14-60 | 7-36 | 0-38 | NP-4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|---|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31OM2: D31-Subalpine woodland silty colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-30 | Gravelly loam, silt, silt loam | ML | A-4 | 0-5 | 0-15 | 70-91 | 69-90 | 59-90 | 45-73 | 0-45 | NP-4 |
| | 30-64 | Very gravelly sandy loam, gravelly silt loam, gravelly sandy loam | GM | A-2-4 | 0-11 | 0-12 | 59-78 | 57-77 | 43-70 | 25-47 | 0-38 | NP-4 |
| | 64-152 | Permanently frozen gravelly sandy loam, permanently frozen very gravelly sandy loam | GM | A-1-b | 0-6 | 0-10 | 40-62 | 37-60 | 25-50 | 12-30 | 0-29 | NP-4 |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 0-44 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 44-152 | Permanently frozen gravelly loam, permanently frozen silt loam | ML | A-4 | 0-3 | 0-13 | 63-94 | 62-94 | 54-94 | 40-75 | 0-38 | NP-4 |
| D31-Alpine tussock-scrub silty polygons, frozen----- | 0-27 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 27-35 | Loam, silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 91-100 | 73-89 | 0-45 | NP-4 |
| | 35-42 | Gravelly sandy loam, silt loam | ML | A-4 | 0 | 0-9 | 71-96 | 70-96 | 63-96 | 46-80 | 0-38 | NP-4 |
| | 42-152 | Permanently frozen gravelly sandy loam, permanently frozen silt loam | ML | A-4 | 0 | 0-5 | 71-96 | 70-96 | 63-96 | 49-83 | 0-38 | NP-4 |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-54 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 65-91 | 0-44 | NP-9 |
| | 54-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 88-100 | 65-91 | 0-44 | NP-9 |
| | | | | | | | | | | | | |
| D31-Boreal taiga silty terraces, frozen----- | 0-18 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 18-28 | Loam, silt loam | ML | A-4 | 0 | 0 | 82-100 | 81-100 | 72-100 | 52-89 | 0-47 | NP-6 |
| | 28-69 | Gravelly sandy loam, silt loam, sandy loam | SM | A-4 | 0 | 0-2 | 68-90 | 67-90 | 56-90 | 31-60 | 0-40 | NP-6 |
| | 69-152 | Permanently frozen silt loam, permanently frozen gravelly sandy loam | SM | A-2-4 | 0 | 0-8 | 57-83 | 55-82 | 38-73 | 22-46 | 0-40 | NP-6 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|--------|--|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-54 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 65-91 | 0-44 | NP-9 |
| | 54-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 88-100 | 65-91 | 0-44 | NP-9 |
| D31TF1: D31-Subalpine woodland silty colluvial slopes----- | 0-15 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 15-22 | Cobbly sandy loam, silt loam | ML | A-4 | 0 | 0-16 | 62-93 | 60-93 | 53-93 | 38-74 | 0-45 | NP-5 |
| | 22-47 | Very gravelly sandy loam, gravelly silt loam, gravelly sandy loam | GC-GM | A-2-4 | 0-1 | 0-13 | 46-76 | 43-75 | 33-70 | 19-47 | 17-35 | 2-10 |
| | 47-152 | Extremely gravelly sandy loam, gravelly silt loam, very gravelly sandy loam | GM | A-1-b | 0-10 | 5-18 | 36-69 | 33-68 | 22-58 | 11-35 | 0-40 | NP-6 |
| D31-Subalpine scrub loamy residual slopes----- | 0-12 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 12-19 | Gravelly sandy loam, silt loam, loam | ML | A-4 | 0 | 0-5 | 73-100 | 71-100 | 59-100 | 38-73 | 20-50 | 1-9 |
| | 19-54 | Extremely gravelly sandy loam, gravelly silt loam, very gravelly sandy loam | GC-GM | A-1-b | 0 | 0-7 | 29-57 | 26-55 | 17-47 | 8-28 | 16-39 | 1-9 |
| | 54-152 | Very gravelly silt loam, extremely gravelly coarse sandy loam | GP-GM | A-1-a | 0 | 0-6 | 11-32 | 7-29 | 4-26 | 2-17 | 0-39 | NP-5 |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 0-22 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 22-27 | Stony loam, silt loam | ML | A-4 | 0-16 | 0-16 | 78-100 | 78-100 | 68-100 | 53-84 | 0-45 | NP-4 |
| | 27-60 | Very stony sandy loam, silt loam, stony loam | SM | A-4 | 0-22 | 0-22 | 59-88 | 57-87 | 45-84 | 29-61 | 0-38 | NP-4 |
| | 60-152 | Permanently frozen silt loam, permanently frozen stony loam | ML | A-4 | 0-12 | 0-13 | 59-91 | 58-90 | 49-90 | 32-67 | 0-38 | NP-4 |
| D31-Subalpine scrub silty till slopes----- | 0-10 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 10-21 | Stony loam, silt loam | ML | A-4 | 0-29 | 0-15 | 66-100 | 64-100 | 58-100 | 45-94 | 0-45 | NP-4 |
| | 21-37 | Stony silt loam, very stony sandy loam | GM | A-2-4 | 0-20 | 0-34 | 47-74 | 45-73 | 36-73 | 21-53 | 0-29 | NP-4 |
| | 37-152 | Extremely stony sandy loam, very stony silt loam, very stony sandy loam | GM | A-1-b | 8-35 | 5-30 | 24-64 | 20-62 | 15-55 | 8-36 | 0-38 | NP-4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|--------|---|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-28 | Gravelly loam, silt, silt loam | ML | A-4 | 0-6 | 0-1 | 71-100 | 70-100 | 62-100 | 44-94 | 0-50 | NP-9 |
| | 28-60 | Gravelly loam, silt loam | ML | A-4 | 0-5 | 0-9 | 73-91 | 72-91 | 61-91 | 41-80 | 0-44 | NP-9 |
| | 60-152 | Permanently frozen gravelly loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0-5 | 0-6 | 73-90 | 72-89 | 63-89 | 45-84 | 0-44 | NP-9 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-48 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 88-100 | 87-100 | 79-100 | 59-97 | 0-44 | NP-9 |
| | 48-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 96-100 | 96-100 | 87-100 | 67-97 | 0-44 | NP-9 |
| D31-Boreal taiga gravelly colluvial slopes----- | 0-4 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 4-8 | Cobbly loam, silt loam | ML | A-4 | 0 | 0-10 | 78-100 | 77-100 | 68-100 | 48-89 | 0-50 | NP-9 |
| | 8-36 | Very gravelly sandy loam, gravelly silt loam, gravelly sandy loam | GM | A-2-4 | 0-7 | 0-11 | 42-73 | 40-72 | 32-71 | 20-49 | 0-39 | NP-9 |
| | 36-152 | Extremely gravelly sandy loam, very gravelly sandy loam, extremely gravelly loamy very fine sand | GP-GM | A-1-a | 0-5 | 0-11 | 17-53 | 14-51 | 8-40 | 4-22 | 0-44 | NP-9 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 0-25 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 25-50 | Very gravelly loam, gravelly silt loam | GM | A-2-4 | 0-7 | 0-22 | 41-75 | 38-74 | 33-74 | 22-62 | 0-40 | NP-6 |
| | 50-152 | Permanently frozen extremely gravelly sandy loam, permanently frozen very gravelly silt loam, permanently frozen very gravelly sandy loam | GM | A-1-b | 0-1 | 0-19 | 30-54 | 27-52 | 20-48 | 12-33 | 0-40 | NP-6 |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-48 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 88-100 | 87-100 | 79-100 | 59-97 | 0-44 | NP-9 |
| | 48-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 96-100 | 96-100 | 87-100 | 67-97 | 0-44 | NP-9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|---|----------------|--------|------------|--------------|--------------------------------------|--------|--------|--------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31TL1: D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-28 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 89-100 | 88-100 | 79-100 | 61-96 | 0-47 | NP-6 |
| | 28-53 | Cobbly sandy loam, silt loam | CL-ML | A-4 | 0 | 0-9 | 80-94 | 79-93 | 68-93 | 45-82 | 0-44 | NP-9 |
| | 53-152 | Permanently frozen sandy loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0-2 | 80-93 | 79-93 | 70-93 | 53-87 | 0-40 | NP-6 |
| D31UC1: D31-Boreal tussock organic plains, frozen----- | 0-41 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 41-49 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 93-100 | 93-100 | 80-100 | 64-100 | 0-50 | NP-9 |
| | 49-56 | Sandy loam, silt loam, loam | CL-ML | A-4 | 0-8 | 0-1 | 84-100 | 83-100 | 65-100 | 42-82 | 0-44 | NP-9 |
| | 56-152 | Permanently frozen loam, permanently frozen silt loam | CL-ML | A-4 | 0 | 0 | 83-100 | 83-100 | 61-100 | 44-85 | 0-44 | NP-9 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-48 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 88-100 | 87-100 | 79-100 | 59-97 | 0-44 | NP-9 |
| | 48-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 96-100 | 96-100 | 87-100 | 67-97 | 0-44 | NP-9 |
| D31-Boreal forest loamy high flood plains----- | 0-13 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 13-18 | Silt loam, sandy loam | ML | A-4 | 0 | 0 | 80-100 | 79-100 | 64-97 | 35-61 | 0-45 | NP-4 |
| | 18-152 | Stratified extremely gravelly loamy sand to very gravelly sandy loam, stratified loamy coarse sand to gravelly sandy loam, stratified very gravelly loamy coarse sand to gravelly sandy loam | GM | A-1-b | 0-12 | 3-19 | 40-80 | 37-79 | 23-61 | 9-29 | 0-26 | NP-4 |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-30 | Gravelly loam, silt, silt loam | ML | A-4 | 0-5 | 0-15 | 70-91 | 69-90 | 59-90 | 45-73 | 0-45 | NP-4 |
| | 30-64 | Very gravelly sandy loam, gravelly silt loam, gravelly sandy loam | GM | A-2-4 | 0-11 | 0-12 | 59-78 | 57-77 | 43-70 | 25-47 | 0-38 | NP-4 |
| | 64-152 | Permanently frozen gravelly sandy loam, permanently frozen very gravelly sandy loam | GM | A-1-b | 0-6 | 0-10 | 40-62 | 37-60 | 25-50 | 12-30 | 0-29 | NP-4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|--------|---|----------------|--------|------------|--------------|--------------------------------------|--------|--------|--------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31UC2: D31-Boreal forest gravelly colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-26 | Very cobbly sandy loam, silt, silt loam | ML | A-4 | 0-3 | 0-24 | 48-100 | 46-100 | 41-100 | 31-90 | 0-43 | NP-3 |
| | 26-58 | Extremely gravelly sandy loam, gravelly silt loam, very gravelly fine sandy loam | GM | A-1-b | 0-18 | 0-19 | 27-63 | 24-62 | 19-61 | 11-40 | 0-40 | NP-6 |
| | 58-152 | Permanently frozen very stony silt loam, permanently frozen extremely stony sandy loam | GM | A-1-b | 4-18 | 8-20 | 13-64 | 10-63 | 7-62 | 4-38 | 0-36 | NP-3 |
| D31UC3: D31-Boreal tussock organic plains, frozen----- | 0-41 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 41-49 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 93-100 | 93-100 | 80-100 | 64-100 | 0-50 | NP-9 |
| | 49-56 | Sandy loam, silt loam, loam | CL-ML | A-4 | 0-8 | 0-1 | 84-100 | 83-100 | 65-100 | 42-82 | 0-44 | NP-9 |
| | 56-152 | Permanently frozen loam, permanently frozen silt loam | CL-ML | A-4 | 0 | 0 | 83-100 | 83-100 | 61-100 | 44-85 | 0-44 | NP-9 |
| D31-Boreal taiga silty colluvial slopes, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-28 | Gravelly loam, silt, silt loam | ML | A-4 | 0-6 | 0-1 | 71-100 | 70-100 | 62-100 | 44-94 | 0-50 | NP-9 |
| | 28-60 | Gravelly loam, silt loam | ML | A-4 | 0-5 | 0-9 | 73-91 | 72-91 | 61-91 | 41-80 | 0-44 | NP-9 |
| | 60-152 | Permanently frozen gravelly loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0-5 | 0-6 | 73-90 | 72-89 | 63-89 | 45-84 | 0-44 | NP-9 |
| D31UC4: D31-Boreal woodland rocky low flood plains----- | 0-30 | Extremely cobbly loamy sand, cobbly sandy loam, very cobbly coarse sandy loam | GM | A-1-b | 0-6 | 5-37 | 40-74 | 38-73 | 24-63 | 9-31 | 0-26 | NP-4 |
| | 30-152 | Very gravelly sandy loam, extremely gravelly loamy coarse sand | GP-GM | A-1-a | 0-10 | 11-42 | 14-64 | 10-62 | 5-41 | 2-16 | 0-26 | NP-4 |
| D31-Boreal forest loamy high flood plains----- | 0-13 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 13-18 | Silt loam, sandy loam | ML | A-4 | 0 | 0 | 80-100 | 79-100 | 64-97 | 35-61 | 0-45 | NP-4 |
| | 18-152 | Stratified extremely gravelly loamy sand to very gravelly sandy loam, stratified loamy coarse sand to gravelly sandy loam, stratified very gravelly loamy coarse sand to gravelly sandy loam | GM | A-1-b | 0-12 | 3-19 | 40-80 | 37-79 | 23-61 | 9-29 | 0-26 | NP-4 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|--|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 0-10 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 10-21 | Stony loam, silt loam | ML | A-4 | 0-29 | 0-15 | 66-100 | 64-100 | 58-100 | 45-94 | 0-45 | NP-4 |
| | 21-37 | Stony silt loam, very stony sandy loam | GM | A-2-4 | 0-20 | 0-34 | 47-74 | 45-73 | 36-73 | 21-53 | 0-29 | NP-4 |
| | 37-152 | Extremely stony sandy loam, very stony silt loam, very stony sandy loam | GM | A-1-b | 8-35 | 5-30 | 24-64 | 20-62 | 15-55 | 8-36 | 0-38 | NP-4 |
| D31-Alpine scrub gravelly circles, acid----- | 0-3 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 3-12 | Very cobbly loam, silt loam | ML | A-4 | 0 | 0-25 | 49-89 | 47-89 | 41-89 | 29-69 | 0-45 | NP-4 |
| | 12-35 | Gravelly silt loam, very gravelly sandy loam | GM | A-2-4 | 0-3 | 0-25 | 40-75 | 38-74 | 30-71 | 17-47 | 0-34 | NP-4 |
| | 35-152 | Extremely cobbly sandy loam, very cobbly silt loam, very cobbly sandy loam | GM | A-1-b | 0-16 | 13-39 | 20-62 | 16-61 | 11-54 | 6-34 | 0-38 | NP-4 |
| D31WA1: D31-Alpine water, ponded----- | 0-152 | Water | | | --- | --- | --- | --- | --- | --- | --- | --- |
| D31YV1: D31-Boreal forest loamy mid flood plains----- | 0-5 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 5-76 | Stratified loamy sand to sandy loam | SM | A-4 | 0 | 0-6 | 89-100 | 89-100 | 74-100 | 33-59 | 0-38 | NP-4 |
| | 76-152 | Stratified loamy sand to sandy loam | SM | A-2-4 | 0 | 0-5 | 91-100 | 91-100 | 71-100 | 26-46 | 0-29 | NP-4 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 0-9 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 9-77 | Stratified fine sandy loam to silt loam, stratified sandy loam to silt loam | ML | A-4 | 0 | 0 | 94-100 | 93-100 | 76-100 | 40-66 | 0-44 | NP-9 |
| | 77-152 | Stratified permanently frozen silt loam to fine sandy loam, stratified permanently frozen sandy loam to silt loam | SM | A-4 | 0 | 0 | 91-100 | 90-100 | 71-99 | 35-62 | 0-44 | NP-9 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|--|--------|--|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31YV1: D31-Boreal scrub sandy low flood plains----- | 0-78 | Stratified loamy sand to gravelly sandy loam, stratified loamy sand to sandy loam | SM | A-4 | 0 | 0-9 | 74-94 | 73-94 | 57-94 | 25-54 | 0-43 | NP-8 |
| | 78-152 | Stratified very gravelly sandy loam to gravelly fine sandy loam, stratified sandy loam to gravelly fine sandy loam, stratified gravelly sandy loam to fine sandy loam | SM | A-2-4 | 0 | 0-7 | 52-95 | 49-94 | 36-91 | 16-50 | 0-43 | NP-8 |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-54 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 65-91 | 0-44 | NP-9 |
| | 54-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 88-100 | 65-91 | 0-44 | NP-9 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 0-9 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 9-77 | Stratified fine sandy loam to silt loam, stratified sandy loam to silt loam | ML | A-4 | 0 | 0 | 94-100 | 93-100 | 76-100 | 40-66 | 0-44 | NP-9 |
| | 77-152 | Stratified permanently frozen silt loam to fine sandy loam, stratified permanently frozen sandy loam to silt loam | SM | A-4 | 0 | 0 | 91-100 | 90-100 | 71-99 | 35-62 | 0-44 | NP-9 |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 42-54 | Loam, silt, silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 90-100 | 65-91 | 0-44 | NP-9 |
| | 54-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 100 | 100 | 88-100 | 65-91 | 0-44 | NP-9 |
| D31YV8: D31-Boreal water, flowing----- | 0-152 | Water | | | --- | --- | --- | --- | --- | --- | --- | --- |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|--------|--|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | 0-9 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 9-77 | Stratified fine sandy loam to silt loam, stratified sandy loam to silt loam | ML | A-4 | 0 | 0 | 94-100 | 93-100 | 76-100 | 40-66 | 0-44 | NP-9 |
| | 77-152 | Stratified permanently frozen silt loam to fine sandy loam, stratified permanently frozen sandy loam to silt loam | SM | A-4 | 0 | 0 | 91-100 | 90-100 | 71-99 | 35-62 | 0-44 | NP-9 |
| D32TL1: D32-Boreal taiga organic plains, frozen----- | 0-41 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 41-60 | Loam, silt, silt loam | CL-ML | A-4 | 0 | 0 | 94-100 | 94-100 | 79-100 | 63-95 | 0-43 | NP-9 |
| | 60-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 94-100 | 94-100 | 79-100 | 62-94 | 0-43 | NP-9 |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 0-21 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 21-56 | Very gravelly sandy loam, gravelly silt loam, gravelly very fine sandy loam | GM | A-2-4 | 0 | 0-14 | 45-74 | 43-73 | 33-68 | 18-44 | 0-40 | NP-6 |
| | 56-152 | Permanently frozen gravelly silt loam, permanently frozen very gravelly fine sandy loam | GM | A-1-b | 0 | 0-13 | 38-66 | 36-64 | 28-61 | 13-35 | 0-40 | NP-6 |
| D32-Boreal taiga loamy escarpment slopes----- | 0-8 | Sandy loam, silt loam, loam | ML | A-4 | 0 | 0 | 86-100 | 85-100 | 64-93 | 39-64 | 0-46 | NP-6 |
| | 8-28 | Silt, loam | CL | A-4 | 0 | 0 | 80-98 | 79-98 | 61-97 | 43-78 | 0-39 | NP-9 |
| | 28-152 | Gravelly sandy loam, very gravelly loamy coarse sand | GP-GM | A-1-a | 0 | 0-6 | 38-78 | 35-78 | 18-54 | 6-22 | 0-31 | NP-10 |
| D32-Boreal taiga silty eolian slopes, frozen----- | 0-11 | Slightly decomposed plant material | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 11-70 | Loam, silt, silt loam | CL-ML | A-4 | 0 | 0 | 77-100 | 76-100 | 62-100 | 45-85 | 0-39 | NP-6 |
| | 70-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 90-100 | 89-100 | 75-100 | 57-90 | 0-39 | NP-6 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 7.--Engineering Index Properties--Continued

| Map symbol and soil name | Depth | USDA texture | Classification | | Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plas- ticity index |
|---|--------|--|----------------|--------|------------|--------------|--------------------------------------|--------|--------|-------|-----------------|--------------------------|
| | | | Unified | AASHTO | >250 mm | 75-250 mm | 4 | 10 | 40 | 200 | | |
| | cm | | | | Pct | Pct | | | | | Pct | |
| D32TL4: D32-Boreal taiga organic plains, frozen----- | 0-41 | Peat | PT | A-8 | 0 | 0 | --- | --- | --- | --- | --- | --- |
| | 41-60 | Loam, silt, silt loam | CL-ML | A-4 | 0 | 0 | 94-100 | 94-100 | 79-100 | 63-95 | 0-43 | NP-9 |
| | 60-152 | Permanently frozen loam, permanently frozen silt, permanently frozen silt loam | ML | A-4 | 0 | 0 | 94-100 | 94-100 | 79-100 | 62-94 | 0-43 | NP-9 |
| | | | | | | | | | | | | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 8.--Erosion Properties

(Entries under "Erosion factors" apply to the entire profile. Entries under "Wind erodibility group" and "Wind erodibility index" apply only to the surface layer.)

| Map symbol and soil name | Depth | Erosion factors | | | Wind erodibility group | Wind erodibility index |
|--|--------|-----------------|-----|---|------------------------------|------------------------------|
| | | Kw | Kf | T | | |
| | cm | | | | | |
| D31BH1: | | | | | | |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 | --- | --- | 3 | 3 | 86 |
| | 8-14 | .24 | .32 | | | |
| | 14-42 | .20 | .49 | | | |
| | 42-152 | .02 | .28 | | | |
| D31-Boreal forest rocky sedimentary colluvial slopes | 0-4 | --- | --- | 3 | 3 | 86 |
| | 4-10 | .20 | .32 | | | |
| | 10-41 | .15 | .43 | | | |
| | 41-152 | .05 | .37 | | | |
| D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 | --- | --- | 2 | 3 | 86 |
| | 21-28 | .43 | .43 | | | |
| | 28-53 | .49 | .55 | | | |
| | 53-152 | .49 | .55 | | | |
| D31BH2: | | | | | | |
| D31-Boreal forest rocky sedimentary colluvial slopes | 0-4 | --- | --- | 3 | 3 | 86 |
| | 4-10 | .20 | .32 | | | |
| | 10-41 | .15 | .43 | | | |
| | 41-152 | .05 | .37 | | | |
| D31-Boreal forest rocky colluvial escarpments----- | 0-4 | --- | --- | 3 | 3 | 86 |
| | 4-10 | .10 | .24 | | | |
| | 10-43 | .05 | .43 | | | |
| | 43-152 | .02 | .24 | | | |
| D31BH3: | | | | | | |
| D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 | --- | --- | 2 | 3 | 86 |
| | 21-28 | .43 | .43 | | | |
| | 28-53 | .49 | .55 | | | |
| | 53-152 | .49 | .55 | | | |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | --- | --- | 2 | 7 | 38 |
| | 42-48 | .55 | .64 | | | |
| | 48-152 | .55 | .55 | | | |
| D31BH5: | | | | | | |
| D31-Boreal taiga/tussock organic terraces, frozen---- | 0-42 | --- | --- | 2 | 7 | 38 |
| | 42-54 | .64 | .64 | | | |
| | 54-152 | .49 | .49 | | | |
| D31-Boreal forest loamy high flood plains----- | 0-13 | --- | --- | 4 | 1 | 180 |
| | 13-18 | .24 | .24 | | | |
| | 18-152 | .10 | .28 | | | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 8.--Erosion Properties--Continued

| Map symbol and soil name | Depth | Erosion factors | | | Wind erodibility group | Wind erodibility index |
|---|-----------|-----------------|-----|---|------------------------------|------------------------------|
| | | Kw | Kf | T | | |
| | <i>cm</i> | | | | | |
| D31BH5: D31-Boreal scrub rocky drainages----- | 0-4 | --- | --- | 3 | 2 | 134 |
| | 4-14 | .24 | .28 | | | |
| | 14-152 | .15 | .37 | | | |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 0-14 | --- | --- | 3 | 3 | 86 |
| | 14-22 | .20 | .32 | | | |
| | 22-152 | .02 | .32 | | | |
| D31-Boreal rubble land----- | 0-55 | .10 | .49 | 1 | 8 | 0 |
| | 55-152 | .02 | .02 | | | |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes----- | 0-4 | --- | --- | 2 | 2 | 134 |
| | 4-8 | .20 | .37 | | | |
| | 8-27 | .20 | .37 | | | |
| | 27-152 | .10 | .55 | | | |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 | --- | --- | 3 | 3 | 86 |
| | 8-14 | .24 | .32 | | | |
| | 14-42 | .20 | .49 | | | |
| | 42-152 | .02 | .28 | | | |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 | --- | --- | 2 | 3 | 86 |
| | 21-26 | .37 | .43 | | | |
| | 26-58 | .15 | .43 | | | |
| | 58-152 | .05 | .32 | | | |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 | --- | --- | 2 | 3 | 86 |
| | 21-26 | .37 | .43 | | | |
| | 26-58 | .15 | .43 | | | |
| | 58-152 | .05 | .32 | | | |
| D31-Boreal woodland silty eolian slopes, frozen----- | 0-25 | --- | --- | 2 | 3 | 86 |
| | 25-50 | .24 | .55 | | | |
| | 50-152 | .15 | .37 | | | |
| D31-Subalpine woodland silty colluvial slopes, frozen---- | 0-21 | --- | --- | 2 | 5 | 56 |
| | 21-30 | .24 | .32 | | | |
| | 30-64 | .20 | .43 | | | |
| | 64-152 | .15 | .37 | | | |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 | --- | --- | 2 | 2 | 134 |
| | 21-28 | .37 | .43 | | | |
| | 28-60 | .43 | .55 | | | |
| | 60-152 | .37 | .49 | | | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 8.--Erosion Properties--Continued

| Map symbol and soil name | Depth | Erosion factors | | | Wind erodibility group | Wind erodibility index |
|---|----------------------------------|--------------------------|--------------------------|---|------------------------------|------------------------------|
| | | Kw | Kf | T | | |
| | <i>cm</i> | | | | | |
| D31HL1: D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 42-48 48-152 | --- .55 .55 | --- .64 .55 | 2 | 7 | 38 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 21-28 28-60 60-152 | --- .37 .43 .37 | --- .43 .55 .49 | 2 | 2 | 134 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 42-48 48-152 | --- .55 .55 | --- .64 .55 | 2 | 7 | 38 |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 42-48 48-152 | --- .55 .55 | --- .64 .55 | 2 | 7 | 38 |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 21-28 28-53 53-152 | --- .43 .49 .49 | --- .43 .55 .55 | 2 | 3 | 86 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 42-48 48-152 | --- .55 .55 | --- .64 .55 | 2 | 7 | 38 |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 8-14 14-42 42-152 | --- .24 .20 .02 | --- .32 .49 .28 | 3 | 3 | 86 |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 21-28 28-60 60-152 | --- .37 .43 .37 | --- .43 .55 .49 | 2 | 2 | 134 |
| D31-Boreal forest rocky sedimentary colluvial slopes | 0-4 4-10 10-41 41-152 | --- .20 .15 .05 | --- .32 .43 .37 | 3 | 3 | 86 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 8.--Erosion Properties--Continued

| Map symbol and soil name | Depth | Erosion factors | | | Wind erodibility group | Wind erodibility index |
|--|-----------|-----------------|-----|---|------------------------------|------------------------------|
| | | Kw | Kf | T | | |
| | <i>cm</i> | | | | | |
| D31LB2: | | | | | | |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 | --- | --- | 3 | 3 | 86 |
| | 8-14 | .24 | .32 | | | |
| | 14-42 | .20 | .49 | | | |
| | 42-152 | .02 | .28 | | | |
| D31MT1: | | | | | | |
| D31-Alpine rubble land----- | 0-152 | .02 | .02 | 1 | 8 | 0 |
| D31-Alpine low scrub gravelly colluvial slopes----- | 0-11 | .24 | .32 | 2 | 2 | 134 |
| | 11-34 | .10 | .37 | | | |
| | 34-152 | .10 | .28 | | | |
| D31MT2: | | | | | | |
| D31-Alpine low scrub gravelly colluvial slopes----- | 0-11 | .24 | .32 | 2 | 2 | 134 |
| | 11-34 | .10 | .37 | | | |
| | 34-152 | .10 | .28 | | | |
| D31-Alpine scrub gravelly circles----- | 0-10 | .24 | .32 | 2 | 3 | 86 |
| | 10-31 | .15 | .32 | | | |
| | 31-152 | .10 | .49 | | | |
| D31-Alpine rubble land----- | 0-152 | .02 | .02 | 1 | 8 | 0 |
| D31MT3: | | | | | | |
| D31-Alpine low scrub organic hummocks, frozen----- | 0-44 | --- | --- | 2 | 3 | 86 |
| | 44-152 | .43 | .64 | | | |
| D31-Alpine scrub loamy hummocks, frozen----- | 0-31 | --- | --- | 2 | 3 | 86 |
| | 31-57 | .28 | .49 | | | |
| | 57-152 | .43 | .64 | | | |
| D31-Alpine low scrub loamy solifluction lobes----- | 0-5 | --- | --- | 2 | 3 | 86 |
| | 5-21 | .24 | .37 | | | |
| | 21-152 | .10 | .24 | | | |
| D31OF1: | | | | | | |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 | --- | --- | 2 | 3 | 86 |
| | 21-26 | .37 | .43 | | | |
| | 26-58 | .15 | .43 | | | |
| | 58-152 | .05 | .32 | | | |
| D31-Boreal woodland silty eolian slopes, frozen----- | 0-25 | --- | --- | 2 | 3 | 86 |
| | 25-50 | .24 | .55 | | | |
| | 50-152 | .15 | .37 | | | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 8.--Erosion Properties--Continued

| Map symbol and soil name | Depth | Erosion factors | | | Wind erodibility group | Wind erodibility index |
|--|-----------|-----------------|-----|---|------------------------------|------------------------------|
| | | Kw | Kf | T | | |
| | <i>cm</i> | | | | | |
| D31OF1: D31-Boreal forest rocky sedimentary colluvial slopes | 0-4 | --- | --- | 3 | 3 | 86 |
| | 4-10 | .20 | .32 | | | |
| | 10-41 | .15 | .43 | | | |
| | 41-152 | .05 | .37 | | | |
| D31OM1: D31-Alpine scrub silty circles----- | 0-11 | .20 | .37 | 2 | 2 | 134 |
| | 11-29 | .10 | .28 | | | |
| | 29-152 | .10 | .43 | | | |
| D31-Alpine rubble land----- | 0-152 | .02 | .02 | 1 | 8 | 0 |
| D31OM2: D31-Alpine scrub silty circles----- | 0-11 | .20 | .37 | 2 | 2 | 134 |
| | 11-29 | .10 | .28 | | | |
| | 29-152 | .10 | .43 | | | |
| D31-Subalpine woodland silty colluvial slopes, frozen--- | 0-21 | --- | --- | 2 | 5 | 56 |
| | 21-30 | .24 | .32 | | | |
| | 30-64 | .20 | .43 | | | |
| | 64-152 | .15 | .37 | | | |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 0-44 | --- | --- | 2 | 3 | 86 |
| | 44-152 | .43 | .64 | | | |
| D31-Alpine tussock-scrub silty polygons, frozen----- | 0-27 | --- | --- | 2 | 2 | 134 |
| | 27-35 | .37 | .24 | | | |
| | 35-42 | .49 | .64 | | | |
| | 42-152 | .49 | .64 | | | |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen--- | 0-42 | --- | --- | 2 | 7 | 38 |
| | 42-54 | .64 | .64 | | | |
| | 54-152 | .49 | .49 | | | |
| D31-Boreal taiga silty terraces, frozen----- | 0-18 | --- | --- | 2 | 3 | 86 |
| | 18-28 | .37 | .37 | | | |
| | 28-69 | .37 | .49 | | | |
| | 69-152 | .10 | .20 | | | |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen--- | 0-42 | --- | --- | 2 | 7 | 38 |
| | 42-54 | .64 | .64 | | | |
| | 54-152 | .49 | .49 | | | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 8.--Erosion Properties--Continued

| Map symbol and soil name | Depth | Erosion factors | | | Wind erodibility group | Wind erodibility index |
|--|-----------|-----------------|-----|---|------------------------------|------------------------------|
| | | Kw | Kf | T | | |
| | <i>cm</i> | | | | | |
| D31TF1: D31-Subalpine woodland silty colluvial slopes----- | 0-15 | --- | --- | 2 | 5 | 56 |
| | 15-22 | .32 | .32 | | | |
| | 22-47 | .24 | .43 | | | |
| | 47-152 | .10 | .32 | | | |
| D31-Subalpine scrub loamy residual slopes----- | 0-12 | --- | --- | 2 | 5 | 56 |
| | 12-19 | .28 | .20 | | | |
| | 19-54 | .10 | .28 | | | |
| | 54-152 | .10 | .37 | | | |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 0-22 | --- | --- | 2 | 3 | 86 |
| | 22-27 | .15 | .32 | | | |
| | 27-60 | .28 | .49 | | | |
| | 60-152 | .37 | .55 | | | |
| D31-Subalpine scrub silty till slopes----- | 0-10 | --- | --- | 2 | 2 | 134 |
| | 10-21 | .20 | .37 | | | |
| | 21-37 | .24 | .49 | | | |
| | 37-152 | .10 | .43 | | | |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 | --- | --- | 2 | 2 | 134 |
| | 21-28 | .37 | .43 | | | |
| | 28-60 | .43 | .55 | | | |
| | 60-152 | .37 | .49 | | | |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | --- | --- | 2 | 7 | 38 |
| | 42-48 | .55 | .64 | | | |
| | 48-152 | .55 | .55 | | | |
| D31-Boreal taiga gravelly colluvial slopes----- | 0-4 | --- | --- | 3 | 2 | 134 |
| | 4-8 | .28 | .32 | | | |
| | 8-36 | .24 | .49 | | | |
| | 36-152 | .05 | .24 | | | |
| D31-Boreal woodland silty eolian slopes, frozen----- | 0-25 | --- | --- | 2 | 3 | 86 |
| | 25-50 | .24 | .55 | | | |
| | 50-152 | .15 | .37 | | | |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | --- | --- | 2 | 7 | 38 |
| | 42-48 | .55 | .64 | | | |
| | 48-152 | .55 | .55 | | | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 8.--Erosion Properties--Continued

| Map symbol and soil name | Depth | Erosion factors | | | Wind erodibility group | Wind erodibility index |
|---|----------------------------------|--------------------------|--------------------------|---|------------------------------|------------------------------|
| | | Kw | Kf | T | | |
| | <i>cm</i> | | | | | |
| D31TL1: D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 21-28 28-53 53-152 | --- .43 .49 .49 | --- .43 .55 .55 | 2 | 3 | 86 |
| D31UC1: D31-Boreal tussock organic plains, frozen----- | 0-41 41-49 49-56 56-152 | --- .49 .32 .32 | --- .49 .37 .37 | 2 | 7 | 38 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 42-48 48-152 | --- .55 .55 | --- .64 .55 | 2 | 7 | 38 |
| D31-Boreal forest loamy high flood plains----- | 0-13 13-18 18-152 | --- .24 .10 | --- .24 .28 | 4 | 1 | 180 |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen---- | 0-21 21-30 30-64 64-152 | --- .24 .20 .15 | --- .32 .43 .37 | 2 | 5 | 56 |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 21-26 26-58 58-152 | --- .37 .15 .05 | --- .43 .43 .32 | 2 | 3 | 86 |
| D31UC3: D31-Boreal tussock organic plains, frozen----- | 0-41 41-49 49-56 56-152 | --- .49 .32 .32 | --- .49 .37 .37 | 2 | 7 | 38 |
| D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 21-28 28-60 60-152 | --- .37 .43 .37 | --- .43 .55 .49 | 2 | 2 | 134 |
| D31UC4: D31-Boreal woodland rocky low flood plains----- | 0-30 30-152 | .10 .02 | .28 .15 | 4 | 2 | 134 |
| D31-Boreal forest loamy high flood plains----- | 0-13 13-18 18-152 | --- .24 .10 | --- .24 .28 | 4 | 1 | 180 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 8.--Erosion Properties--Continued

| Map symbol and soil name | Depth | Erosion factors | | | Wind erodibility group | Wind erodibility index |
|---|----------------------------------|--------------------------|--------------------------|-----|------------------------------|------------------------------|
| | | Kw | Kf | T | | |
| | <i>cm</i> | | | | | |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 0-10 10-21 21-37 37-152 | --- .20 .24 .10 | --- .37 .49 .43 | 2 | 2 | 134 |
| D31-Alpine scrub gravelly circles, acid----- | 0-3 3-12 12-35 35-152 | --- .24 .10 .10 | --- .32 .43 .37 | 2 | 3 | 86 |
| D31WA1: D31-Alpine water, ponded---- | 0-152 | --- | --- | --- | 8 | 0 |
| D31YV1: D31-Boreal forest loamy mid flood plains----- | 0-5 5-76 76-152 | --- .43 .32 | --- .43 .32 | 4 | 2 | 134 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 0-9 9-77 77-152 | --- .49 .28 | --- .49 .28 | 2 | 2 | 134 |
| D31-Boreal scrub sandy low flood plains----- | 0-78 78-152 | .28 .20 | .37 .32 | 4 | 3 | 86 |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen---- | 0-42 42-54 54-152 | --- .64 .49 | --- .64 .49 | 2 | 7 | 38 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 0-9 9-77 77-152 | --- .49 .28 | --- .49 .28 | 2 | 2 | 134 |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen---- | 0-42 42-54 54-152 | --- .64 .49 | --- .64 .49 | 2 | 7 | 38 |
| D31YV8: D31-Boreal water, flowing---- | 0-152 | --- | --- | --- | 8 | 0 |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | 0-9 9-77 77-152 | --- .49 .28 | --- .49 .28 | 2 | 2 | 134 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 8.--Erosion Properties--Continued

| Map symbol and soil name | Depth | Erosion factors | | | Wind erodibility group | Wind erodibility index |
|---|-----------|-----------------|-----|---|------------------------------|------------------------------|
| | | Kw | Kf | T | | |
| | <i>cm</i> | | | | | |
| D32TL1: D32-Boreal taiga organic plains, frozen----- | 0-41 | --- | --- | 2 | 7 | 38 |
| | 41-60 | .64 | .64 | | | |
| | 60-152 | .55 | .55 | | | |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 0-21 | --- | --- | 2 | 2 | 134 |
| | 21-56 | .24 | .43 | | | |
| | 56-152 | .10 | .20 | | | |
| D32-Boreal taiga loamy escarpment slopes----- | 0-8 | .10 | .02 | 2 | 6 | 48 |
| | 8-28 | .32 | .37 | | | |
| | 28-152 | .10 | .17 | | | |
| D32-Boreal taiga silty eolian slopes, frozen----- | 0-11 | --- | --- | 2 | 3 | 86 |
| | 11-70 | .37 | .43 | | | |
| | 70-152 | .43 | .43 | | | |
| D32TL4: D32-Boreal taiga organic plains, frozen----- | 0-41 | --- | --- | 2 | 7 | 38 |
| | 41-60 | .64 | .64 | | | |
| | 60-152 | .55 | .55 | | | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 9.--Physical Properties of the Soils

(Sand, silt, and clay values are shown either as a range or a representative value (RV). Absence of an entry indicates that data were not estimated. Soil properties are measured or inferred from direct observations in the field or laboratory.)

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Permeability | Available water capacity | Shrink- swell potential | Organic matter |
|--|--------|-------|-------|------|--------------------------|--------------|--------------------------------|-------------------------------|-------------------|
| | cm | Pct | Pct | Pct | g/cc | um/sec | cm | Pct | Pct |
| D31BH1: | | | | | | | | | |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 8-14 | 20-52 | 37-75 | 2-12 | 0.89-1.18 | 1.0-11.0 | 0.10-0.38 | 0.1-3.0 | 2.0-11 |
| | 14-42 | 32-60 | 30-55 | 2-15 | 1.11-1.34 | 2.0-13.0 | 0.07-0.18 | 0.1-3.0 | 0.5-8.0 |
| | 42-152 | 23-75 | 15-75 | 2-15 | 1.26-1.48 | 9.0-26.0 | 0.04-0.07 | 0.1-3.0 | 0.4-6.0 |
| D31-Boreal forest rocky sedimentary colluvial slopes | 0-4 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 4-10 | 9-49 | 47-82 | 2-15 | 0.93-1.22 | 3.0-13.0 | 0.10-0.34 | 0.1-3.0 | 2.0-11 |
| | 10-41 | 44-74 | 16-50 | 2-15 | 1.13-1.40 | 3.0-16.0 | 0.07-0.18 | 0.1-3.0 | 0.5-8.0 |
| | 41-152 | 52-77 | 15-44 | 2-15 | 1.15-1.39 | 5.0-22.0 | 0.05-0.08 | 0.1-3.0 | 0.4-6.0 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 21-28 | 14-50 | 47-83 | 2-11 | 0.95-1.18 | 1.0-7.0 | 0.10-0.43 | 0.1-3.0 | 2.0-11 |
| | 28-53 | 20-60 | 35-72 | 2-15 | 1.06-1.27 | 1.0-6.0 | 0.10-0.36 | 0.1-3.0 | 0.4-8.0 |
| | 53-152 | 12-54 | 44-83 | 2-11 | 0.99-1.18 | 0.0-2.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| D31BH2: | | | | | | | | | |
| D31-Boreal forest rocky sedimentary colluvial slopes | 0-4 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 4-10 | 9-49 | 47-82 | 2-15 | 0.93-1.22 | 3.0-13.0 | 0.10-0.34 | 0.1-3.0 | 2.0-11 |
| | 10-41 | 44-74 | 16-50 | 2-15 | 1.13-1.40 | 3.0-16.0 | 0.07-0.18 | 0.1-3.0 | 0.5-8.0 |
| | 41-152 | 52-77 | 15-44 | 2-15 | 1.15-1.39 | 5.0-22.0 | 0.05-0.08 | 0.1-3.0 | 0.4-6.0 |
| D31-Boreal forest rocky colluvial escarpments----- | 0-4 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 4-10 | 44-74 | 16-50 | 2-15 | 0.92-1.24 | 6.0-20.0 | 0.07-0.18 | 0.1-3.0 | 2.0-11 |
| | 10-43 | 44-74 | 16-50 | 2-15 | 0.97-1.26 | 6.0-18.0 | 0.05-0.07 | 0.1-3.0 | 0.5-8.0 |
| | 43-152 | 44-74 | 16-50 | 2-15 | 1.12-1.31 | 7.0-19.0 | 0.02-0.05 | 0.1-3.0 | 0.4-6.0 |
| D31BH3: | | | | | | | | | |
| D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 21-28 | 14-50 | 47-83 | 2-11 | 0.95-1.18 | 1.0-7.0 | 0.10-0.43 | 0.1-3.0 | 2.0-11 |
| | 28-53 | 20-60 | 35-72 | 2-15 | 1.06-1.27 | 1.0-6.0 | 0.10-0.36 | 0.1-3.0 | 0.4-8.0 |
| | 53-152 | 12-54 | 44-83 | 2-11 | 0.99-1.18 | 0.0-2.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 0.0-4.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 42-48 | 5-43 | 47-83 | 2-15 | 1.03-1.24 | 1.0-5.0 | 0.10-0.38 | 0.1-3.0 | 0.4-8.0 |
| | 48-152 | 5-43 | 46-83 | 2-15 | 1.05-1.20 | 0.0-2.0 | 0.10-0.39 | 0.1-3.0 | 0.4-8.0 |
| D31BH5: | | | | | | | | | |
| D31-Boreal taiga/tussock organic terraces, frozen---- | 0-42 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 42-54 | 10-48 | 47-83 | 2-15 | 1.02-1.21 | 0.0-5.0 | 0.10-0.40 | 0.1-3.0 | 0.4-8.0 |
| | 54-152 | 10-48 | 47-83 | 2-15 | 0.98-1.19 | 0.0-2.0 | 0.10-0.40 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal forest loamy high flood plains----- | 0-13 | 0-0 | 0-0 | 0-0 | 0.80-1.12 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 13-18 | 44-74 | 16-50 | 2-10 | 1.00-1.27 | 6.0-17.0 | 0.10-0.41 | 0.1-3.0 | 2.0-11 |
| | 18-152 | 55-86 | 9-37 | 2-8 | 1.26-1.46 | 16.0-55.0 | 0.03-0.08 | 0.1-3.0 | 0.1-2.5 |
| D31-Boreal scrub rocky drainages----- | 0-4 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 4-14 | 44-74 | 16-50 | 2-15 | 0.92-1.23 | 5.0-18.0 | 0.10-0.39 | 0.1-3.0 | 2.0-11 |
| | 14-152 | 52-77 | 15-44 | 2-15 | 1.19-1.46 | 9.0-24.0 | 0.02-0.09 | 0.1-3.0 | 0.1-2.5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 9.--Physical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Permeability | Available water capacity | Shrink- swell potential | Organic matter |
|---|----------------------------------|--------------------------------|--------------------------------|-----------------------------|--|--|--|--|--|
| | cm | Pct | Pct | Pct | g/cc | um/sec | cm | Pct | Pct |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 0-14 14-22 22-152 | 0-0 28-60 45-72 | 0-0 25-58 20-50 | 0-0 2-15 2-15 | 0.10-0.30 0.94-1.24 1.20-1.45 | 1.0-10.0 5.0-17.0 4.0-20.0 | 0.10-0.36 0.09-0.19 0.04-0.05 | 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 |
| D31-Boreal rubble land. | | | | | | | | | |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes----- | 0-4 4-8 8-27 27-152 | 0-0 30-58 40-70 33-60 | 0-0 40-68 20-52 27-65 | 0-0 2-8 2-10 2-13 | 0.10-0.30 0.91-1.15 1.24-1.46 0.57-0.67 | 1.0-10.0 1.0-8.0 3.0-15.0 7.0-22.0 | 0.10-0.36 0.09-0.18 0.01-0.01 0.00-0.03 | 0.0-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.5-6.0 0.2-4.0 |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 8-14 14-42 42-152 | 0-0 20-52 32-60 23-75 | 0-0 37-75 30-55 15-75 | 0-0 2-12 2-15 2-15 | 0.10-0.30 0.89-1.18 1.11-1.34 1.26-1.48 | 1.0-10.0 1.0-11.0 2.0-13.0 9.0-26.0 | 0.10-0.36 0.10-0.38 0.07-0.18 0.04-0.07 | 0.1-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.5-8.0 0.4-6.0 |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 21-26 26-58 58-152 | 0-0 14-49 19-70 23-72 | 0-0 47-83 20-79 20-75 | 0-0 2-8 2-10 2-8 | 0.10-0.30 0.87-1.14 1.12-1.36 1.28-1.47 | 1.0-10.0 1.0-9.0 4.0-18.0 0.0-2.0 | 0.10-0.36 0.10-0.36 0.08-0.16 0.07-0.09 | 0.1-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 0.4-8.0 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 21-26 26-58 58-152 | 0-0 14-49 19-70 23-72 | 0-0 47-83 20-79 20-75 | 0-0 2-8 2-10 2-8 | 0.10-0.30 0.87-1.14 1.12-1.36 1.28-1.47 | 1.0-10.0 1.0-9.0 4.0-18.0 0.0-2.0 | 0.10-0.36 0.10-0.36 0.08-0.16 0.07-0.09 | 0.1-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 0.4-8.0 |
| D31-Boreal woodland silty eolian slopes, frozen | 0-25 25-50 50-152 | 0-0 26-50 44-74 | 0-0 48-71 16-50 | 0-0 2-10 2-10 | 0.10-0.30 1.06-1.31 1.18-1.37 | 1.0-10.0 2.0-12.0 0.0-2.0 | 0.10-0.36 0.09-0.22 0.07-0.16 | 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 0.4-8.0 0.4-8.0 |
| D31-Subalpine woodland silty colluvial slopes, frozen---- | 0-21 21-30 30-64 64-152 | 0-0 14-49 44-74 50-77 | 0-0 49-83 18-50 16-48 | 0-0 2-8 2-8 2-8 | 0.37-0.42 0.97-1.22 1.20-1.45 1.45-1.69 | 1.0-10.0 1.0-10.0 3.0-15.0 0.0-2.0 | 0.10-0.49 0.10-0.36 0.09-0.26 0.02-0.09 | 0.0-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 0.2-4.0 |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 21-28 28-60 60-152 | 0-0 15-48 25-50 15-50 | 0-0 40-80 40-72 40-80 | 0-0 2-15 2-15 2-15 | 0.79-0.91 0.98-1.23 1.10-1.31 1.06-1.29 | 1.0-10.0 1.0-9.0 1.0-9.0 0.0-2.0 | 0.10-0.36 0.10-0.38 0.10-0.34 0.10-0.34 | 0.1-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 0.4-8.0 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 42-48 48-152 | 0-0 5-43 5-43 | 0-0 47-83 46-83 | 0-0 2-15 2-15 | 0.10-0.30 1.03-1.24 1.05-1.20 | 0.0-4.0 1.0-5.0 0.0-2.0 | 0.10-0.36 0.10-0.38 0.10-0.39 | 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 0.4-8.0 0.4-8.0 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 21-28 28-60 60-152 | 0-0 15-48 25-50 15-50 | 0-0 40-80 40-72 40-80 | 0-0 2-15 2-15 2-15 | 0.79-0.91 0.98-1.23 1.10-1.31 1.06-1.29 | 1.0-10.0 1.0-9.0 1.0-9.0 0.0-2.0 | 0.10-0.36 0.10-0.38 0.10-0.34 0.10-0.34 | 0.1-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 0.4-8.0 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 42-48 48-152 | 0-0 5-43 5-43 | 0-0 47-83 46-83 | 0-0 2-15 2-15 | 0.10-0.30 1.03-1.24 1.05-1.20 | 0.0-4.0 1.0-5.0 0.0-2.0 | 0.10-0.36 0.10-0.38 0.10-0.39 | 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 0.4-8.0 0.4-8.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 9.--Physical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Permeability | Available water capacity | Shrink- swell potential | Organic matter |
|---|--------|-------|-------|------|--------------------------|--------------|--------------------------------|-------------------------------|-------------------|
| | cm | Pct | Pct | Pct | g/cc | um/sec | cm | Pct | Pct |
| D31KT1: | | | | | | | | | |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 0.0-4.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 42-48 | 5-43 | 47-83 | 2-15 | 1.03-1.24 | 1.0-5.0 | 0.10-0.38 | 0.1-3.0 | 0.4-8.0 |
| | 48-152 | 5-43 | 46-83 | 2-15 | 1.05-1.20 | 0.0-2.0 | 0.10-0.39 | 0.1-3.0 | 0.4-8.0 |
| D31LB1: | | | | | | | | | |
| D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 21-28 | 14-50 | 47-83 | 2-11 | 0.95-1.18 | 1.0-7.0 | 0.10-0.43 | 0.1-3.0 | 2.0-11 |
| | 28-53 | 20-60 | 35-72 | 2-15 | 1.06-1.27 | 1.0-6.0 | 0.10-0.36 | 0.1-3.0 | 0.4-8.0 |
| | 53-152 | 12-54 | 44-83 | 2-11 | 0.99-1.18 | 0.0-2.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 0.0-4.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 42-48 | 5-43 | 47-83 | 2-15 | 1.03-1.24 | 1.0-5.0 | 0.10-0.38 | 0.1-3.0 | 0.4-8.0 |
| | 48-152 | 5-43 | 46-83 | 2-15 | 1.05-1.20 | 0.0-2.0 | 0.10-0.39 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 8-14 | 20-52 | 37-75 | 2-12 | 0.89-1.18 | 1.0-11.0 | 0.10-0.38 | 0.1-3.0 | 2.0-11 |
| | 14-42 | 32-60 | 30-55 | 2-15 | 1.11-1.34 | 2.0-13.0 | 0.07-0.18 | 0.1-3.0 | 0.5-8.0 |
| | 42-152 | 23-75 | 15-75 | 2-15 | 1.26-1.48 | 9.0-26.0 | 0.04-0.07 | 0.1-3.0 | 0.4-6.0 |
| D31LB2: | | | | | | | | | |
| D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 | 0-0 | 0-0 | 0-0 | 0.79-0.91 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 21-28 | 15-48 | 40-80 | 2-15 | 0.98-1.23 | 1.0-9.0 | 0.10-0.38 | 0.1-3.0 | 2.0-11 |
| | 28-60 | 25-50 | 40-72 | 2-15 | 1.10-1.31 | 1.0-9.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| | 60-152 | 15-50 | 40-80 | 2-15 | 1.06-1.29 | 0.0-2.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal forest rocky sedimentary colluvial slopes | 0-4 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 4-10 | 9-49 | 47-82 | 2-15 | 0.93-1.22 | 3.0-13.0 | 0.10-0.34 | 0.1-3.0 | 2.0-11 |
| | 10-41 | 44-74 | 16-50 | 2-15 | 1.13-1.40 | 3.0-16.0 | 0.07-0.18 | 0.1-3.0 | 0.5-8.0 |
| | 41-152 | 52-77 | 15-44 | 2-15 | 1.15-1.39 | 5.0-22.0 | 0.05-0.08 | 0.1-3.0 | 0.4-6.0 |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 8-14 | 20-52 | 37-75 | 2-12 | 0.89-1.18 | 1.0-11.0 | 0.10-0.38 | 0.1-3.0 | 2.0-11 |
| | 14-42 | 32-60 | 30-55 | 2-15 | 1.11-1.34 | 2.0-13.0 | 0.07-0.18 | 0.1-3.0 | 0.5-8.0 |
| | 42-152 | 23-75 | 15-75 | 2-15 | 1.26-1.48 | 9.0-26.0 | 0.04-0.07 | 0.1-3.0 | 0.4-6.0 |
| D31MT1: | | | | | | | | | |
| D31-Alpine rubble land. | | | | | | | | | |
| D31-Alpine low scrub gravelly colluvial slopes--- | 0-11 | 28-52 | 45-70 | 2-8 | 0.97-1.24 | 2.0-13.0 | 0.10-0.29 | 0.1-3.0 | 2.0-11 |
| | 11-34 | 44-74 | 20-50 | 2-10 | 1.28-1.52 | 3.0-19.0 | 0.02-0.07 | 0.1-3.0 | 0.5-8.0 |
| | 34-152 | 52-77 | 15-44 | 2-8 | 1.19-1.47 | 10.0-32.0 | 0.06-0.08 | 0.1-3.0 | 0.4-6.0 |
| D31MT2: | | | | | | | | | |
| D31-Alpine low scrub gravelly colluvial slopes--- | 0-11 | 28-52 | 45-70 | 2-8 | 0.97-1.24 | 2.0-13.0 | 0.10-0.29 | 0.1-3.0 | 2.0-11 |
| | 11-34 | 44-74 | 20-50 | 2-10 | 1.28-1.52 | 3.0-19.0 | 0.02-0.07 | 0.1-3.0 | 0.5-8.0 |
| | 34-152 | 52-77 | 15-44 | 2-8 | 1.19-1.47 | 10.0-32.0 | 0.06-0.08 | 0.1-3.0 | 0.4-6.0 |
| D31-Alpine scrub gravelly circles----- | 0-10 | 26-55 | 43-72 | 2-15 | 0.91-1.20 | 3.0-13.0 | 0.09-0.29 | 0.1-3.0 | 2.0-11 |
| | 10-31 | 45-70 | 16-50 | 2-15 | 1.30-1.56 | 2.0-14.0 | 0.02-0.08 | 0.1-3.0 | 0.5-8.0 |
| | 31-152 | 48-77 | 16-50 | 2-15 | 1.16-1.41 | 7.0-34.0 | 0.06-0.10 | 0.1-3.0 | 0.4-6.0 |
| D31-Alpine rubble land. | | | | | | | | | |
| D31MT3: | | | | | | | | | |
| D31-Alpine low scrub organic hummocks, frozen---- | 0-44 | 0-0 | 0-0 | 0-0 | 0.33-0.38 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 44-152 | 20-50 | 44-78 | 1-8 | 1.09-1.32 | 0.0-2.0 | 0.10-0.28 | 0.1-3.0 | 0.4-8.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 9.--Physical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Permeability | Available water capacity | Shrink- swell potential | Organic matter |
|--|--------|-------|-------|------|--------------------------|--------------|--------------------------------|-------------------------------|-------------------|
| | cm | Pct | Pct | Pct | g/cc | um/sec | cm | Pct | Pct |
| D31MT3: | | | | | | | | | |
| D31-Alpine scrub loamy hummocks, frozen----- | 0-31 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 31-57 | 30-70 | 25-60 | 2-10 | 1.36-1.55 | 1.0-13.0 | 0.09-0.24 | 0.1-3.0 | 0.4-8.0 |
| | 57-152 | 27-70 | 23-65 | 2-8 | 1.27-1.43 | 0.0-2.0 | 0.03-0.14 | 0.1-3.0 | 0.2-4.0 |
| D31-Alpine low scrub loamy solifluction lobes--- | 0-5 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 5-21 | 17-54 | 44-78 | 2-8 | 0.97-1.18 | 1.0-7.0 | 0.10-0.29 | 0.1-3.0 | 2.0-11 |
| | 21-152 | 36-83 | 9-54 | 2-10 | 1.50-1.68 | 12.0-27.0 | 0.08-0.16 | 0.1-3.0 | 0.1-2.5 |
| D31OF1: | | | | | | | | | |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 0-21 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 21-26 | 14-49 | 47-83 | 2-8 | 0.87-1.14 | 1.0-9.0 | 0.10-0.36 | 0.1-3.0 | 2.0-11 |
| | 26-58 | 19-70 | 20-79 | 2-10 | 1.12-1.36 | 4.0-18.0 | 0.08-0.16 | 0.1-3.0 | 0.4-8.0 |
| | 58-152 | 23-72 | 20-75 | 2-8 | 1.28-1.47 | 0.0-2.0 | 0.07-0.09 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal woodland silty eolian slopes frozen----- | 0-25 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 25-50 | 26-50 | 48-71 | 2-10 | 1.06-1.31 | 2.0-12.0 | 0.09-0.22 | 0.1-3.0 | 0.4-8.0 |
| | 50-152 | 44-74 | 16-50 | 2-10 | 1.18-1.37 | 0.0-2.0 | 0.07-0.16 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 0-4 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 4-10 | 9-49 | 47-82 | 2-15 | 0.93-1.22 | 3.0-13.0 | 0.10-0.34 | 0.1-3.0 | 2.0-11 |
| | 10-41 | 44-74 | 16-50 | 2-15 | 1.13-1.40 | 3.0-16.0 | 0.07-0.18 | 0.1-3.0 | 0.5-8.0 |
| | 41-152 | 52-77 | 15-44 | 2-15 | 1.15-1.39 | 5.0-22.0 | 0.05-0.08 | 0.1-3.0 | 0.4-6.0 |
| D31OM1: | | | | | | | | | |
| D31-Alpine scrub silty circles----- | 0-11 | 15-49 | 46-82 | 2-8 | 0.84-1.13 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 2.0-11 |
| | 11-29 | 35-60 | 30-57 | 2-10 | 1.17-1.48 | 2.0-16.0 | 0.02-0.10 | 0.1-3.0 | 2.0-11 |
| | 29-152 | 42-77 | 16-50 | 2-8 | 0.98-1.29 | 8.0-22.0 | 0.07-0.08 | 0.1-3.0 | 0.4-8.0 |
| D31-Alpine rubble land. | | | | | | | | | |
| D31OM2: | | | | | | | | | |
| D31-Alpine scrub silty circles----- | 0-11 | 15-49 | 46-82 | 2-8 | 0.84-1.13 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 2.0-11 |
| | 11-29 | 35-60 | 30-57 | 2-10 | 1.17-1.48 | 2.0-16.0 | 0.02-0.10 | 0.1-3.0 | 2.0-11 |
| | 29-152 | 42-77 | 16-50 | 2-8 | 0.98-1.29 | 8.0-22.0 | 0.07-0.08 | 0.1-3.0 | 0.4-8.0 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 0-21 | 0-0 | 0-0 | 0-0 | 0.37-0.42 | 1.0-10.0 | 0.10-0.49 | 0.0-3.0 | 50-100 |
| | 21-30 | 14-49 | 49-83 | 2-8 | 0.97-1.22 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 2.0-11 |
| | 30-64 | 44-74 | 18-50 | 2-8 | 1.20-1.45 | 3.0-15.0 | 0.09-0.26 | 0.1-3.0 | 0.4-8.0 |
| | 64-152 | 50-77 | 16-48 | 2-8 | 1.45-1.69 | 0.0-2.0 | 0.02-0.09 | 0.1-3.0 | 0.2-4.0 |
| D31SD1: | | | | | | | | | |
| D31-Alpine low scrub organic hummocks, frozen--- | 0-44 | 0-0 | 0-0 | 0-0 | 0.33-0.38 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 44-152 | 20-50 | 44-78 | 1-8 | 1.09-1.32 | 0.0-2.0 | 0.10-0.28 | 0.1-3.0 | 0.4-8.0 |
| D31-Alpine tussock-scrub silty polygons, frozen----- | 0-27 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 27-35 | 18-46 | 46-78 | 2-8 | 1.05-1.20 | 0.0-3.0 | 0.10-0.45 | 0.1-3.0 | 2.0-11 |
| | 35-42 | 25-55 | 43-70 | 2-8 | 1.05-1.20 | 0.0-3.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| | 42-152 | 20-55 | 43-78 | 2-8 | 1.05-1.20 | 0.0-2.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| D31TE1: | | | | | | | | | |
| D31-Boreal taiga/tussock organic terraces, frozen--- | 0-42 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 42-54 | 10-48 | 47-83 | 2-15 | 1.02-1.21 | 0.0-5.0 | 0.10-0.40 | 0.1-3.0 | 0.4-8.0 |
| | 54-152 | 10-48 | 47-83 | 2-15 | 0.98-1.19 | 0.0-2.0 | 0.10-0.40 | 0.1-3.0 | 0.4-8.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 9.--Physical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Permeability | Available water capacity | Shrink- swell potential | Organic matter |
|---|----------------------------------|--------------------------------|--------------------------------|-----------------------------|--|---|--|--|--|
| | cm | Pct | Pct | Pct | g/cc | um/sec | cm | Pct | Pct |
| D31TE1: D31-Boreal taiga silty terraces, frozen----- | 0-18 18-28 28-69 69-152 | 0-0 25-52 33-70 39-73 | 0-0 45-73 20-57 17-50 | 0-0 2-10 2-12 2-11 | 0.10-0.30 0.89-1.15 1.05-1.27 1.23-1.42 | 1.0-10.0 1.0-9.0 3.0-10.0 0.0-2.0 | 0.10-0.36 0.10-0.41 0.10-0.33 0.10-0.29 | 0.1-3.5 0.1-3.5 0.1-3.5 0.1-3.5 | 50-100 2.0-11 0.4-8.0 0.4-8.0 |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen---- | 0-42 42-54 54-152 | 0-0 10-48 10-48 | 0-0 47-83 47-83 | 0-0 2-15 2-15 | 0.10-0.30 1.02-1.21 0.98-1.19 | 1.0-10.0 0.0-5.0 0.0-2.0 | 0.10-0.36 0.10-0.40 0.10-0.40 | 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 0.4-8.0 0.4-8.0 |
| D31TF1: D31-Subalpine woodland silty colluvial slopes----- | 0-15 15-22 22-47 47-152 | 0-0 30-55 40-70 45-77 | 0-0 43-67 16-50 16-50 | 0-0 2-9 5-15 3-10 | 0.10-0.30 0.92-1.19 1.14-1.40 1.33-1.58 | 1.0-10.0 3.0-12.0 3.0-16.0 6.0-23.0 | 0.10-0.36 0.10-0.34 0.03-0.11 0.02-0.08 | 0.0-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 0.3-4.0 |
| D31-Subalpine scrub loamy residual slopes----- | 0-12 12-19 19-54 54-152 | 0-0 31-60 35-75 42-70 | 0-0 38-65 15-55 21-55 | 0-0 2-15 4-15 2-9 | 0.10-0.30 0.93-1.25 1.20-1.54 0.98-1.14 | 1.0-10.0 7.0-21.0 5.0-22.0 13.0-54.0 | 0.10-0.36 0.10-0.38 0.02-0.08 0.02-0.03 | 0.0-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.5-8.0 0.4-6.0 |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen---- | 0-22 22-27 27-60 60-152 | 0-0 25-50 28-62 28-51 | 0-0 48-72 36-70 42-70 | 0-0 2-8 2-8 2-8 | 0.10-0.30 0.96-1.21 1.21-1.45 1.14-1.40 | 1.0-10.0 1.0-10.0 4.0-20.0 0.0-2.0 | 0.10-0.36 0.10-0.38 0.09-0.26 0.10-0.28 | 0.0-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 0.4-8.0 |
| D31-Subalpine scrub silty till slopes----- | 0-10 10-21 21-37 37-152 | 0-0 25-52 28-70 35-70 | 0-0 46-72 20-70 22-55 | 0-0 2-8 2-10 2-10 | 0.10-0.30 0.84-1.13 1.14-1.37 1.21-1.46 | 1.0-10.0 1.0-11.0 3.0-13.0 6.0-23.0 | 0.10-0.36 0.10-0.34 0.08-0.20 0.02-0.06 | 0.0-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 0.3-4.0 |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 21-28 28-60 60-152 | 0-0 15-48 25-50 15-50 | 0-0 40-80 40-72 40-80 | 0-0 2-15 2-15 2-15 | 0.79-0.91 0.98-1.23 1.10-1.31 1.06-1.29 | 1.0-10.0 1.0-9.0 1.0-9.0 0.0-2.0 | 0.10-0.36 0.10-0.38 0.10-0.34 0.10-0.34 | 0.1-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.4-8.0 0.4-8.0 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 42-48 48-152 | 0-0 5-43 5-43 | 0-0 47-83 46-83 | 0-0 2-15 2-15 | 0.10-0.30 1.03-1.24 1.05-1.20 | 0.0-4.0 1.0-5.0 0.0-2.0 | 0.10-0.36 0.10-0.38 0.10-0.39 | 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 0.4-8.0 0.4-8.0 |
| D31-Boreal taiga gravelly colluvial slopes----- | 0-4 4-8 8-36 36-152 | 0-0 25-50 30-56 52-80 | 0-0 45-72 30-55 15-44 | 0-0 2-15 2-15 2-15 | 0.10-0.30 0.93-1.21 1.02-1.27 1.31-1.54 | 1.0-10.0 2.0-11.0 3.0-13.0 13.0-33.0 | 0.10-0.36 0.10-0.38 0.09-0.18 0.07-0.10 | 0.1-3.0 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 2.0-11 0.5-8.0 0.4-6.0 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 0-25 25-50 50-152 | 0-0 26-50 44-74 | 0-0 48-71 16-50 | 0-0 2-10 2-10 | 0.10-0.30 1.06-1.31 1.18-1.37 | 1.0-10.0 2.0-12.0 0.0-2.0 | 0.10-0.36 0.09-0.22 0.07-0.16 | 0.1-3.0 0.1-3.0 0.1-3.0 | 50-100 0.4-8.0 0.4-8.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 9.--Physical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Permeability | Available water capacity | Shrink- swell potential | Organic matter |
|--|--------|-------|-------|------|--------------------------|--------------|--------------------------------|-------------------------------|-------------------|
| | cm | Pct | Pct | Pct | g/cc | um/sec | cm | Pct | Pct |
| D31TL1: | | | | | | | | | |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 0.0-4.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 42-48 | 5-43 | 47-83 | 2-15 | 1.03-1.24 | 1.0-5.0 | 0.10-0.38 | 0.1-3.0 | 0.4-8.0 |
| | 48-152 | 5-43 | 46-83 | 2-15 | 1.05-1.20 | 0.0-2.0 | 0.10-0.39 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 0-21 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 21-28 | 14-50 | 47-83 | 2-11 | 0.95-1.18 | 1.0-7.0 | 0.10-0.43 | 0.1-3.0 | 2.0-11 |
| | 28-53 | 20-60 | 35-72 | 2-15 | 1.06-1.27 | 1.0-6.0 | 0.10-0.36 | 0.1-3.0 | 0.4-8.0 |
| | 53-152 | 12-54 | 44-83 | 2-11 | 0.99-1.18 | 0.0-2.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| D31UC1: | | | | | | | | | |
| D31-Boreal tussock organic plains, frozen----- | 0-41 | 0-0 | 0-0 | 0-0 | 0.33-0.38 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 41-49 | 2-50 | 35-85 | 2-15 | 0.97-1.18 | 1.0-6.0 | 0.10-0.44 | 0.1-3.0 | 2.0-11 |
| | 49-56 | 25-55 | 30-72 | 2-15 | 1.29-1.51 | 1.0-11.0 | 0.10-0.41 | 0.1-3.0 | 0.4-8.0 |
| | 56-152 | 20-50 | 35-75 | 2-15 | 1.28-1.46 | 0.0-2.0 | 0.10-0.41 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 0-42 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 0.0-4.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 42-48 | 5-43 | 47-83 | 2-15 | 1.03-1.24 | 1.0-5.0 | 0.10-0.38 | 0.1-3.0 | 0.4-8.0 |
| | 48-152 | 5-43 | 46-83 | 2-15 | 1.05-1.20 | 0.0-2.0 | 0.10-0.39 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal forest loamy high flood plains----- | 0-13 | 0-0 | 0-0 | 0-0 | 0.80-1.12 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 13-18 | 44-74 | 16-50 | 2-10 | 1.00-1.27 | 6.0-17.0 | 0.10-0.41 | 0.1-3.0 | 2.0-11 |
| | 18-152 | 55-86 | 9-37 | 2-8 | 1.26-1.46 | 16.0-55.0 | 0.03-0.08 | 0.1-3.0 | 0.1-2.5 |
| D31UC2: | | | | | | | | | |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 0-21 | 0-0 | 0-0 | 0-0 | 0.37-0.42 | 1.0-10.0 | 0.10-0.49 | 0.0-3.0 | 50-100 |
| | 21-30 | 14-49 | 49-83 | 2-8 | 0.97-1.22 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 2.0-11 |
| | 30-64 | 44-74 | 18-50 | 2-8 | 1.20-1.45 | 3.0-15.0 | 0.09-0.26 | 0.1-3.0 | 0.4-8.0 |
| | 64-152 | 50-77 | 16-48 | 2-8 | 1.45-1.69 | 0.0-2.0 | 0.02-0.09 | 0.1-3.0 | 0.2-4.0 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 0-21 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 21-26 | 14-49 | 47-83 | 2-8 | 0.87-1.14 | 1.0-9.0 | 0.10-0.36 | 0.1-3.0 | 2.0-11 |
| | 26-58 | 19-70 | 20-79 | 2-10 | 1.12-1.36 | 4.0-18.0 | 0.08-0.16 | 0.1-3.0 | 0.4-8.0 |
| | 58-152 | 23-72 | 20-75 | 2-8 | 1.28-1.47 | 0.0-2.0 | 0.07-0.09 | 0.1-3.0 | 0.4-8.0 |
| D31UC3: | | | | | | | | | |
| D31-Boreal tussock organic plains, frozen----- | 0-41 | 0-0 | 0-0 | 0-0 | 0.33-0.38 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 41-49 | 2-50 | 35-85 | 2-15 | 0.97-1.18 | 1.0-6.0 | 0.10-0.44 | 0.1-3.0 | 2.0-11 |
| | 49-56 | 25-55 | 30-72 | 2-15 | 1.29-1.51 | 1.0-11.0 | 0.10-0.41 | 0.1-3.0 | 0.4-8.0 |
| | 56-152 | 20-50 | 35-75 | 2-15 | 1.28-1.46 | 0.0-2.0 | 0.10-0.41 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 | 0-0 | 0-0 | 0-0 | 0.79-0.91 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 21-28 | 15-48 | 40-80 | 2-15 | 0.98-1.23 | 1.0-9.0 | 0.10-0.38 | 0.1-3.0 | 2.0-11 |
| | 28-60 | 25-50 | 40-72 | 2-15 | 1.10-1.31 | 1.0-9.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| | 60-152 | 15-50 | 40-80 | 2-15 | 1.06-1.29 | 0.0-2.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| D31UC4: | | | | | | | | | |
| D31-Boreal woodland rocky low flood plains----- | 0-30 | 55-86 | 8-37 | 1-10 | 1.24-1.49 | 13.0-34.0 | 0.02-0.08 | 0.1-3.0 | 0.1-2.5 |
| | 30-152 | 72-88 | 9-20 | 1-8 | 1.50-1.69 | 20.0-60.0 | 0.02-0.03 | 0.1-3.0 | 0.1-2.5 |
| D31-Boreal forest loamy high flood plains----- | 0-13 | 0-0 | 0-0 | 0-0 | 0.80-1.12 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 13-18 | 44-74 | 16-50 | 2-10 | 1.00-1.27 | 6.0-17.0 | 0.10-0.41 | 0.1-3.0 | 2.0-11 |
| | 18-152 | 55-86 | 9-37 | 2-8 | 1.26-1.46 | 16.0-55.0 | 0.03-0.08 | 0.1-3.0 | 0.1-2.5 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 9.--Physical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Permeability | Available water capacity | Shrink- swell potential | Organic matter |
|---|--------|-------|-------|------|--------------------------|--------------|--------------------------------|-------------------------------|-------------------|
| | cm | Pct | Pct | Pct | g/cc | um/sec | cm | Pct | Pct |
| D31UC5: | | | | | | | | | |
| D31-Subalpine scrub silty till slopes----- | 0-10 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.0-3.0 | 50-100 |
| | 10-21 | 25-52 | 46-72 | 2-8 | 0.84-1.13 | 1.0-11.0 | 0.10-0.34 | 0.1-3.0 | 2.0-11 |
| | 21-37 | 28-70 | 20-70 | 2-10 | 1.14-1.37 | 3.0-13.0 | 0.08-0.20 | 0.1-3.0 | 0.4-8.0 |
| | 37-152 | 35-70 | 22-55 | 2-10 | 1.21-1.46 | 6.0-23.0 | 0.02-0.06 | 0.1-3.0 | 0.3-4.0 |
| D31-Alpine scrub gravelly circles, acid----- | 0-3 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 3-12 | 28-52 | 45-70 | 2-8 | 0.93-1.21 | 2.0-13.0 | 0.10-0.29 | 0.1-3.0 | 2.0-11 |
| | 12-35 | 44-72 | 20-50 | 2-8 | 1.19-1.43 | 2.0-11.0 | 0.03-0.08 | 0.1-3.0 | 0.5-8.0 |
| | 35-152 | 42-72 | 20-55 | 2-8 | 1.08-1.36 | 9.0-23.0 | 0.07-0.08 | 0.1-3.0 | 0.4-6.0 |
| D31WAl: | | | | | | | | | |
| D31-Alpine water, ponded. | | | | | | | | | |
| D31YV1: | | | | | | | | | |
| D31-Boreal forest loamy mid flood plains----- | 0-5 | 0-0 | 0-0 | 0-0 | 1.07-1.22 | 1.0-6.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 5-76 | 50-75 | 16-44 | 2-9 | 1.01-1.26 | 8.0-18.0 | 0.10-0.41 | 0.1-3.0 | 0.4-8.0 |
| | 76-152 | 58-79 | 13-39 | 2-9 | 1.31-1.55 | 8.0-22.0 | 0.10-0.45 | 0.1-3.0 | 0.2-4.0 |
| D31-Boreal taiga loamy high flood plains, frozen--- | 0-9 | 0-0 | 0-0 | 0-0 | 1.05-1.20 | 0.0-3.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 9-77 | 44-74 | 16-50 | 2-15 | 1.01-1.23 | 4.0-13.0 | 0.10-0.44 | 0.1-3.0 | 0.4-8.0 |
| | 77-152 | 44-74 | 16-50 | 2-15 | 1.16-1.37 | 0.0-2.0 | 0.10-0.43 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal scrub sandy low flood plains----- | 0-78 | 52-77 | 15-44 | 2-15 | 1.11-1.35 | 8.0-23.0 | 0.10-0.34 | 0.1-3.0 | 0.4-8.0 |
| | 78-152 | 52-77 | 15-44 | 2-15 | 1.26-1.48 | 10.0-39.0 | 0.10-0.29 | 0.1-3.0 | 0.4-8.0 |
| D31YV2: | | | | | | | | | |
| D31-Boreal taiga/tussock organic terraces, frozen---- | 0-42 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 42-54 | 10-48 | 47-83 | 2-15 | 1.02-1.21 | 0.0-5.0 | 0.10-0.40 | 0.1-3.0 | 0.4-8.0 |
| | 54-152 | 10-48 | 47-83 | 2-15 | 0.98-1.19 | 0.0-2.0 | 0.10-0.40 | 0.1-3.0 | 0.4-8.0 |
| D31-Boreal taiga loamy high flood plains, frozen--- | 0-9 | 0-0 | 0-0 | 0-0 | 1.05-1.20 | 0.0-3.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 9-77 | 44-74 | 16-50 | 2-15 | 1.01-1.23 | 4.0-13.0 | 0.10-0.44 | 0.1-3.0 | 0.4-8.0 |
| | 77-152 | 44-74 | 16-50 | 2-15 | 1.16-1.37 | 0.0-2.0 | 0.10-0.43 | 0.1-3.0 | 0.4-8.0 |
| D31YV3: | | | | | | | | | |
| D31-Boreal taiga/tussock organic terraces, frozen---- | 0-42 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-10.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 42-54 | 10-48 | 47-83 | 2-15 | 1.02-1.21 | 0.0-5.0 | 0.10-0.40 | 0.1-3.0 | 0.4-8.0 |
| | 54-152 | 10-48 | 47-83 | 2-15 | 0.98-1.19 | 0.0-2.0 | 0.10-0.40 | 0.1-3.0 | 0.4-8.0 |
| D31YV8: | | | | | | | | | |
| D31-Boreal water, flowing. | | | | | | | | | |
| D31YV9: | | | | | | | | | |
| D31-Boreal taiga loamy high flood plains, frozen--- | 0-9 | 0-0 | 0-0 | 0-0 | 1.05-1.20 | 0.0-3.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 9-77 | 44-74 | 16-50 | 2-15 | 1.01-1.23 | 4.0-13.0 | 0.10-0.44 | 0.1-3.0 | 0.4-8.0 |
| | 77-152 | 44-74 | 16-50 | 2-15 | 1.16-1.37 | 0.0-2.0 | 0.10-0.43 | 0.1-3.0 | 0.4-8.0 |
| D32TL1: | | | | | | | | | |
| D32-Boreal taiga organic plains, frozen----- | 0-41 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-12.0 | 0.10-0.36 | 0.1-2.5 | 50-100 |
| | 41-60 | 10-48 | 47-82 | 2-15 | 1.07-1.23 | 0.0-3.0 | 0.10-0.40 | 0.1-2.5 | 0.4-8.0 |
| | 60-152 | 10-48 | 47-83 | 2-15 | 1.08-1.25 | 0.0-2.0 | 0.10-0.40 | 0.1-2.5 | 0.4-8.0 |
| D32TL2: | | | | | | | | | |
| D32-Boreal forest gravelly escarpments, frozen----- | 0-21 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-12.0 | 0.10-0.36 | 0.1-3.0 | 50-100 |
| | 21-56 | 44-74 | 16-50 | 2-10 | 1.12-1.36 | 3.0-14.0 | 0.08-0.26 | 0.1-3.0 | 0.4-8.0 |
| | 56-152 | 44-74 | 16-50 | 2-10 | 1.34-1.55 | 0.0-2.0 | 0.08-0.18 | 0.1-3.0 | 0.4-8.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 9.--Physical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Sand | Silt | Clay | Moist bulk density | Permeability | Available water capacity | Shrink- swell potential | Organic matter |
|--|--------|-------|-------|------|--------------------------|--------------|--------------------------------|-------------------------------|-------------------|
| | cm | Pct | Pct | Pct | g/cc | um/sec | cm | Pct | Pct |
| D32TL2: | | | | | | | | | |
| D32-Boreal taiga loamy escarpment slopes----- | 0-8 | 44-74 | 16-50 | 2-10 | 1.27-1.47 | 2.0-17.0 | 0.10-0.41 | 0.1-2.5 | 2.0-11 |
| | 8-28 | 16-53 | 32-82 | 2-15 | 1.37-1.52 | 1.0-8.0 | 0.10-0.35 | 0.1-2.5 | 0.5-6.0 |
| | 28-152 | 71-88 | 9-20 | 2-15 | 1.50-1.69 | 20.0-61.0 | 0.03-0.08 | 0.1-2.5 | 0.1-2.5 |
| D32-Boreal taiga silty eolian slopes, frozen----- | 0-11 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-12.0 | 0.10-0.36 | 0.1-2.5 | 50-100 |
| | 11-70 | 10-48 | 47-83 | 2-10 | 1.13-1.35 | 1.0-9.0 | 0.09-0.36 | 0.1-2.5 | 0.4-8.0 |
| | 70-152 | 11-48 | 47-83 | 2-10 | 1.05-1.20 | 0.0-2.0 | 0.10-0.40 | 0.1-2.5 | 0.4-8.0 |
| D32TL4: | | | | | | | | | |
| D32-Boreal taiga organic plains, frozen----- | 0-41 | 0-0 | 0-0 | 0-0 | 0.10-0.30 | 1.0-12.0 | 0.10-0.36 | 0.1-2.5 | 50-100 |
| | 41-60 | 10-48 | 47-82 | 2-15 | 1.07-1.23 | 0.0-3.0 | 0.10-0.40 | 0.1-2.5 | 0.4-8.0 |
| | 60-152 | 10-48 | 47-83 | 2-15 | 1.08-1.25 | 0.0-2.0 | 0.10-0.40 | 0.1-2.5 | 0.4-8.0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils

(Absence of an entry indicates that data were not estimated.)

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|---|--------|---------------------------------|--|------------------|----------------------|--------|----------|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31BH1: D31-Boreal forest rocky colluvial slopes----- | 0-8 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 8-14 | 15.0-35.0 | 1.3-7.3 | 3.8-7.3 | 0 | 0 | 0.1-2.5 | 0 |
| | 14-42 | 2.0-13.7 | 1.0-9.0 | 4.4-7.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-152 | 2.0-13.9 | 1.0-10.0 | 4.9-7.7 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal forest rocky sedimentary colluvial slopes-- | 0-4 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 1.0-4.5 | 0 |
| | 4-10 | 2.1-13.2 | 2.0-20.0 | 3.9-8.1 | 0-2 | 0 | 1.0-4.5 | 0 |
| | 10-41 | 2.0-11.2 | 1.0-9.0 | 4.2-8.0 | 0-4 | 0 | 1.0-4.5 | 0 |
| | 41-152 | 2.0-13.0 | 1.0-10.0 | 5.0-7.9 | 0-3 | 0 | 1.0-4.5 | 0 |
| D31-Boreal taiga silty eolian slopes, frozen---- | 0-21 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 21-28 | 15.0-35.0 | 1.3-6.8 | 4.0-6.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 28-53 | 2.0-13.9 | 1.0-10.0 | 4.2-7.1 | 0 | 0 | 0.1-2.5 | 0 |
| | 53-152 | 2.0-10.5 | 1.0-10.0 | 5.1-7.0 | 0 | 0 | 0.1-2.5 | 0 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes-- | 0-4 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 1.0-4.5 | 0 |
| | 4-10 | 2.1-13.2 | 2.0-20.0 | 3.9-8.1 | 0-2 | 0 | 1.0-4.5 | 0 |
| | 10-41 | 2.0-11.2 | 1.0-9.0 | 4.2-8.0 | 0-4 | 0 | 1.0-4.5 | 0 |
| | 41-152 | 2.0-13.0 | 1.0-10.0 | 5.0-7.9 | 0-3 | 0 | 1.0-4.5 | 0 |
| D31-Boreal forest rocky colluvial escarpments----- | 0-4 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 1.0-4.0 | 0 |
| | 4-10 | 2.1-11.5 | 2.0-20.0 | 5.5-9.0 | 0-3 | 0 | 2.5-5.5 | 0 |
| | 10-43 | 2.0-11.2 | 1.0-9.0 | 5.2-9.0 | 0-6 | 0 | 2.5-5.5 | 0 |
| | 43-152 | 2.0-11.4 | 1.0-10.0 | 5.9-8.2 | 0-6 | 0 | 2.5-5.5 | 0 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen---- | 0-21 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 21-28 | 15.0-35.0 | 1.3-6.8 | 4.0-6.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 28-53 | 2.0-13.9 | 1.0-10.0 | 4.2-7.1 | 0 | 0 | 0.1-2.5 | 0 |
| | 53-152 | 2.0-10.5 | 1.0-10.0 | 5.1-7.0 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal taiga organic eolian slopes, frozen---- | 0-42 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-48 | 7.0-23.0 | 1.0-11.0 | 5.1-6.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 48-152 | 5.0-20.0 | 1.0-10.0 | 6.2-6.4 | 0 | 0 | 0.1-2.5 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|--|--------|---------------------------------|--|------------------|----------------------|--------|----------|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | 42.0-91.0 | 19.5-96.3 | 3.8-5.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-54 | 5.0-20.0 | 1.0-10.0 | 5.2-7.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 54-152 | 5.0-20.0 | 1.0-10.0 | 5.0-7.0 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal forest loamy high flood plains----- | 0-13 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-5.1 | 0 |
| | 13-18 | 2.0-7.7 | 2.0-20.0 | 4.9-7.2 | 0 | 0 | 0.1-5.1 | 0 |
| | 18-152 | 1.6-6.9 | 1.0-10.0 | 5.8-7.5 | 0 | 0 | 0.1-5.1 | 0 |
| D31-Boreal scrub rocky drainages--- | 0-4 | 42.0-91.0 | 15.6-86.2 | 3.4-5.6 | 0 | 0 | 0.1-6.5 | 0 |
| | 4-14 | 2.1-14.1 | 2.0-20.0 | 4.9-7.6 | 0 | 0 | 0.1-6.5 | 0 |
| | 14-152 | 1.9-13.3 | 1.0-10.0 | 5.3-7.6 | 0 | 0 | 0.1-6.5 | 0 |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 0-14 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 14-22 | 2.1-14.1 | 2.0-20.0 | 4.2-8.2 | 0 | 0 | 0.1-2.5 | 0 |
| | 22-152 | 2.0-13.9 | 1.0-10.0 | 5.4-8.1 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal rubble land. | | | | | | | | |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes-- | 0-4 | 42.0-91.0 | 14.8-55.2 | 3.3-4.8 | 0 | 0 | 0.0-3.0 | 0 |
| | 4-8 | 15.0-35.0 | 0.9-9.4 | 3.4-6.1 | 0 | 0 | 0.1-3.0 | 0 |
| | 8-27 | 1.9-7.8 | 1.0-9.0 | 4.8-6.0 | 0 | 0 | 0.1-3.0 | 0 |
| | 27-152 | 0.2-7.4 | 1.0-10.0 | 6.0-6.7 | 0 | 0 | 0.1-3.0 | 0 |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 8-14 | 15.0-35.0 | 1.3-7.3 | 3.8-7.3 | 0 | 0 | 0.1-2.5 | 0 |
| | 14-42 | 2.0-13.7 | 1.0-9.0 | 4.4-7.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-152 | 2.0-13.9 | 1.0-10.0 | 4.9-7.7 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-3.0 | 0 |
| | 21-26 | 2.1-6.2 | 2.0-20.0 | 4.3-7.2 | 0 | 0 | 0.1-3.0 | 0 |
| | 26-58 | 2.0-9.6 | 1.0-10.0 | 4.7-7.3 | 0 | 0 | 0.1-3.0 | 0 |
| | 58-152 | 2.0-6.1 | 1.0-10.0 | 5.1-7.1 | 0 | 0 | 0.1-3.0 | 0 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-3.0 | 0 |
| | 21-26 | 2.1-6.2 | 2.0-20.0 | 4.3-7.2 | 0 | 0 | 0.1-3.0 | 0 |
| | 26-58 | 2.0-9.6 | 1.0-10.0 | 4.7-7.3 | 0 | 0 | 0.1-3.0 | 0 |
| | 58-152 | 2.0-6.1 | 1.0-10.0 | 5.1-7.1 | 0 | 0 | 0.1-3.0 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|--|----------------------------------|--|---|--|----------------------|------------------|--|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31CF1: D31-Boreal woodland silty eolian slopes, frozen---- | 0-25 25-50 50-152 | 42.0-91.0 5.0-20.0 5.0-18.0 | 15.6-81.5 1.3-6.1 1.3-6.1 | 3.4-5.5 4.2-6.2 4.8-6.2 | 0 0 0 | 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 0-21 21-30 30-64 64-152 | 65.2-103.4 2.1-8.0 2.0-7.9 2.0-7.7 | 15.0-47.0 2.0-20.0 1.0-10.0 1.0-10.0 | 4.4-7.0 5.6-6.7 5.8-7.1 5.8-6.6 | 0 0 0 0 | 0 0 0 0 | 0.1-2.0 0.1-3.0 0.1-3.0 0.1-3.0 | 0 0 0 0 |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 21-28 28-60 60-152 | 42.0-91.0 15.0-35.0 2.0-13.9 2.0-13.9 | 15.6-81.5 1.3-9.0 1.0-10.0 1.0-10.0 | 3.4-5.5 4.1-7.8 4.5-7.4 4.9-6.9 | 0 0 0 0 | 0 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 0 |
| D31-Boreal taiga organic eolian slopes, frozen---- | 0-42 42-48 48-152 | 42.0-91.0 7.0-23.0 5.0-20.0 | 15.6-81.5 1.0-11.0 1.0-10.0 | 3.4-5.5 5.1-6.5 6.2-6.4 | 0 0 0 | 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 21-28 28-60 60-152 | 42.0-91.0 15.0-35.0 2.0-13.9 2.0-13.9 | 15.6-81.5 1.3-9.0 1.0-10.0 1.0-10.0 | 3.4-5.5 4.1-7.8 4.5-7.4 4.9-6.9 | 0 0 0 0 | 0 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 0 |
| D31-Boreal taiga organic eolian slopes, frozen---- | 0-42 42-48 48-152 | 42.0-91.0 7.0-23.0 5.0-20.0 | 15.6-81.5 1.0-11.0 1.0-10.0 | 3.4-5.5 5.1-6.5 6.2-6.4 | 0 0 0 | 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen---- | 0-42 42-48 48-152 | 42.0-91.0 7.0-23.0 5.0-20.0 | 15.6-81.5 1.0-11.0 1.0-10.0 | 3.4-5.5 5.1-6.5 6.2-6.4 | 0 0 0 | 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen---- | 0-21 21-28 28-53 53-152 | 42.0-91.0 15.0-35.0 2.0-13.9 2.0-10.5 | 15.6-81.5 1.3-6.8 1.0-10.0 1.0-10.0 | 3.4-5.5 4.0-6.8 4.2-7.1 5.1-7.0 | 0 0 0 0 | 0 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|--|----------------------------------|--|--|--|------------------------|------------------|--|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31LB1: D31-Boreal taiga organic eolian slopes, frozen---- | 0-42 42-48 48-152 | 42.0-91.0 7.0-23.0 5.0-20.0 | 15.6-81.5 1.0-11.0 1.0-10.0 | 3.4-5.5 5.1-6.5 6.2-6.4 | 0 0 0 | 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 8-14 14-42 42-152 | 42.0-91.0 15.0-35.0 2.0-13.7 2.0-13.9 | 15.6-81.5 1.3-7.3 1.0-9.0 1.0-10.0 | 3.4-5.5 3.8-7.3 4.4-7.8 4.9-7.7 | 0 0 0 0 | 0 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 0 |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 21-28 28-60 60-152 | 42.0-91.0 15.0-35.0 2.0-13.9 2.0-13.9 | 15.6-81.5 1.3-9.0 1.0-10.0 1.0-10.0 | 3.4-5.5 4.1-7.8 4.5-7.4 4.9-6.9 | 0 0 0 0 | 0 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 0 |
| D31-Boreal forest rocky sedimentary colluvial slopes-- | 0-4 4-10 10-41 41-152 | 42.0-91.0 2.1-13.2 2.0-11.2 2.0-13.0 | 15.6-81.5 2.0-20.0 1.0-9.0 1.0-10.0 | 3.4-5.5 3.9-8.1 4.2-8.0 5.0-7.9 | 0 0-2 0-4 0-3 | 0 0 0 0 | 1.0-4.5 1.0-4.5 1.0-4.5 1.0-4.5 | 0 0 0 0 |
| D31-Boreal forest rocky colluvial slopes----- | 0-8 8-14 14-42 42-152 | 42.0-91.0 15.0-35.0 2.0-13.7 2.0-13.9 | 15.6-81.5 1.3-7.3 1.0-9.0 1.0-10.0 | 3.4-5.5 3.8-7.3 4.4-7.8 4.9-7.7 | 0 0 0 0 | 0 0 0 0 | 0.1-2.5 0.1-2.5 0.1-2.5 0.1-2.5 | 0 0 0 0 |
| D31MT1: D31-Alpine low scrub gravelly colluvial slopes-- | 0-11 11-34 34-152 | 15.0-35.0 6.0-21.0 2.0-7.9 | 1.3-5.1 1.3-5.0 1.0-10.0 | 3.7-6.3 4.2-6.2 5.0-6.3 | 0 0 0 | 0 0 0 | 0.1-3.0 0.1-3.0 0.1-3.0 | 0 0 0 |
| D31-Alpine rubble land. | | | | | | | | |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes-- | 0-11 11-34 34-152 | 15.0-35.0 6.0-21.0 2.0-7.9 | 1.3-5.1 1.3-5.0 1.0-10.0 | 3.7-6.3 4.2-6.2 5.0-6.3 | 0 0 0 | 0 0 0 | 0.1-3.0 0.1-3.0 0.1-3.0 | 0 0 0 |
| D31-Alpine scrub gravelly circles-- | 0-10 10-31 31-152 | 15.0-35.0 2.0-13.7 2.0-13.9 | 1.3-9.0 1.0-9.0 1.0-10.0 | 4.2-6.1 5.0-6.2 5.5-6.1 | 0 0 0 | 0 0 0 | 0.1-3.0 0.1-3.0 0.1-3.0 | 0 0 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|--|--------|---------------------------------|--|------------------|----------------------|--------|----------|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31MT2: D31-Alpine rubble land. | | | | | | | | |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen-- | 0-44 | 37.0-84.0 | 23.1-77.1 | 4.1-5.4 | 0 | 0 | 0.1-3.0 | 0 |
| | 44-152 | 6.0-22.0 | 1.0-11.0 | 5.0-6.8 | 0 | 0 | 0.1-3.0 | 0 |
| D31-Alpine scrub loamy hummocks, frozen----- | 0-31 | 42.0-91.0 | 15.6-52.3 | 3.4-4.7 | 0 | 0 | 0.1-3.0 | 0 |
| | 31-57 | 2.0-7.9 | 1.0-10.0 | 5.2-6.6 | 0 | 0 | 0.1-3.0 | 0 |
| | 57-152 | 2.0-7.7 | 1.0-10.0 | 5.2-5.8 | 0 | 0 | 0.1-3.0 | 0 |
| D31-Alpine low scrub loamy solifluction lobes | 0-5 | 42.0-91.0 | 21.8-101.8 | 4.0-5.9 | 0 | 0 | 0.1-3.0 | 0 |
| | 5-21 | 2.0-7.7 | 2.0-20.0 | 5.0-6.5 | 0 | 0 | 0.1-3.0 | 0 |
| | 21-152 | 1.6-6.9 | 1.0-10.0 | 5.5-6.7 | 0 | 0 | 0.1-3.0 | 0 |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-3.0 | 0 |
| | 21-26 | 2.1-6.2 | 2.0-20.0 | 4.3-7.2 | 0 | 0 | 0.1-3.0 | 0 |
| | 26-58 | 2.0-9.6 | 1.0-10.0 | 4.7-7.3 | 0 | 0 | 0.1-3.0 | 0 |
| | 58-152 | 2.0-6.1 | 1.0-10.0 | 5.1-7.1 | 0 | 0 | 0.1-3.0 | 0 |
| D31-Boreal woodland silty eolian slopes, frozen---- | 0-25 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 25-50 | 5.0-20.0 | 1.3-6.1 | 4.2-6.2 | 0 | 0 | 0.1-2.5 | 0 |
| | 50-152 | 5.0-18.0 | 1.3-6.1 | 4.8-6.2 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal forest rocky sedimentary colluvial slopes-- | 0-4 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 1.0-4.5 | 0 |
| | 4-10 | 2.1-13.2 | 2.0-20.0 | 3.9-8.1 | 0-2 | 0 | 1.0-4.5 | 0 |
| | 10-41 | 2.0-11.2 | 1.0-9.0 | 4.2-8.0 | 0-4 | 0 | 1.0-4.5 | 0 |
| | 41-152 | 2.0-13.0 | 1.0-10.0 | 5.0-7.9 | 0-3 | 0 | 1.0-4.5 | 0 |
| D31OM1: D31-Alpine scrub silty circles----- | 0-11 | 2.1-8.0 | 2.0-20.0 | 5.7-8.1 | 0-8 | 0 | 0.1-5.0 | 0 |
| | 11-29 | 2.1-8.0 | 1.0-9.0 | 5.6-8.2 | 0-12 | 0 | 0.1-8.5 | 0 |
| | 29-152 | 2.0-7.9 | 1.0-10.0 | 6.4-7.5 | 0-12 | 0 | 0.1-8.6 | 0 |
| D31-Alpine rubble land. | | | | | | | | |
| D31OM2: D31-Alpine scrub silty circles----- | 0-11 | 2.1-8.0 | 2.0-20.0 | 5.7-8.1 | 0-8 | 0 | 0.1-5.0 | 0 |
| | 11-29 | 2.1-8.0 | 1.0-9.0 | 5.6-8.2 | 0-12 | 0 | 0.1-8.5 | 0 |
| | 29-152 | 2.0-7.9 | 1.0-10.0 | 6.4-7.5 | 0-12 | 0 | 0.1-8.6 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|--|--------|---------------------------------|--|------------------|----------------------|--------|----------|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31OM2: D31-Subalpine woodland silty colluvial slopes, frozen----- | 0-21 | 65.2-103.4 | 15.0-47.0 | 4.4-7.0 | 0 | 0 | 0.1-2.0 | 0 |
| | 21-30 | 2.1-8.0 | 2.0-20.0 | 5.6-6.7 | 0 | 0 | 0.1-3.0 | 0 |
| | 30-64 | 2.0-7.9 | 1.0-10.0 | 5.8-7.1 | 0 | 0 | 0.1-3.0 | 0 |
| | 64-152 | 2.0-7.7 | 1.0-10.0 | 5.8-6.6 | 0 | 0 | 0.1-3.0 | 0 |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen-- | 0-44 | 37.0-84.0 | 23.1-77.1 | 4.1-5.4 | 0 | 0 | 0.1-3.0 | 0 |
| | 44-152 | 6.0-22.0 | 1.0-11.0 | 5.0-6.8 | 0 | 0 | 0.1-3.0 | 0 |
| D31-Alpine tussock-scrub silty polygons, frozen----- | 0-27 | 42.0-91.0 | 15.6-72.9 | 3.4-5.3 | 0 | 0 | 0.1-3.0 | 0 |
| | 27-35 | 15.0-35.0 | 1.3-5.1 | 4.0-5.2 | 0 | 0 | 0.1-3.0 | 0 |
| | 35-42 | 2.0-7.9 | 1.0-10.0 | 4.8-6.2 | 0 | 0 | 0.1-3.0 | 0 |
| | 42-152 | 2.0-7.9 | 1.0-10.0 | 5.4-6.2 | 0 | 0 | 0.1-3.0 | 0 |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | 42.0-91.0 | 19.5-96.3 | 3.8-5.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-54 | 5.0-20.0 | 1.0-10.0 | 5.2-7.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 54-152 | 5.0-20.0 | 1.0-10.0 | 5.0-7.0 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal taiga silty terraces, frozen----- | 0-18 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 18-28 | 15.0-35.0 | 1.3-6.2 | 4.4-6.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 28-69 | 2.0-9.6 | 1.0-10.0 | 5.2-7.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 69-152 | 2.0-9.6 | 1.0-10.0 | 5.2-7.7 | 0 | 0 | 0.1-2.5 | 0 |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | 42.0-91.0 | 19.5-96.3 | 3.8-5.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-54 | 5.0-20.0 | 1.0-10.0 | 5.2-7.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 54-152 | 5.0-20.0 | 1.0-10.0 | 5.0-7.0 | 0 | 0 | 0.1-2.5 | 0 |
| D31TF1: D31-Subalpine woodland silty colluvial slopes-- | 0-15 | 42.0-91.0 | 19.5-86.2 | 3.8-5.6 | 0 | 0 | 0.0-3.0 | 0 |
| | 15-22 | 2.1-8.9 | 2.0-20.0 | 4.8-7.3 | 0 | 0 | 0.1-3.0 | 0 |
| | 22-47 | 4.5-13.5 | 1.0-9.0 | 5.1-7.4 | 0 | 0 | 0.1-3.0 | 0 |
| | 47-152 | 2.9-9.6 | 1.0-10.0 | 4.6-7.2 | 0 | 0 | 0.1-3.0 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|--|--------|---------------------------------|--|------------------|----------------------|--------|----------|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31TF1: D31-Subalpine scrub loamy residual slopes--- | 0-12 | 42.0-91.0 | 15.6-69.0 | 3.4-5.2 | 0 | 0 | 0.0-3.0 | 0 |
| | 12-19 | 15.0-35.0 | 2.5-9.0 | 3.8-5.6 | 0 | 0 | 0.1-4.0 | 0 |
| | 19-54 | 6.0-21.0 | 2.4-8.8 | 4.6-5.8 | 0 | 0 | 0.1-4.0 | 0 |
| | 54-152 | 2.0-8.8 | 1.0-10.0 | 5.4-6.2 | 0 | 0 | 0.1-4.0 | 0 |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen---- | 0-22 | 42.0-91.0 | 16.5-72.9 | 3.5-5.3 | 0 | 0 | 0.0-3.0 | 0 |
| | 22-27 | 15.0-35.0 | 1.3-5.1 | 4.0-5.8 | 0 | 0 | 0.1-3.0 | 0 |
| | 27-60 | 2.0-7.9 | 1.0-10.0 | 4.5-6.6 | 0 | 0 | 0.1-3.0 | 0 |
| | 60-152 | 2.0-7.9 | 1.0-10.0 | 4.9-6.1 | 0 | 0 | 0.1-3.0 | 0 |
| D31-Subalpine scrub silty till slopes----- | 0-10 | 42.0-91.0 | 15.6-61.7 | 3.4-5.0 | 0 | 0 | 0.0-3.0 | 0 |
| | 10-21 | 15.0-35.0 | 1.3-5.1 | 3.7-6.2 | 0 | 0 | 0.1-3.0 | 0 |
| | 21-37 | 2.0-7.7 | 1.0-9.0 | 4.1-6.9 | 0 | 0 | 0.1-3.0 | 0 |
| | 37-152 | 2.0-7.9 | 1.0-10.0 | 5.0-6.7 | 0 | 0 | 0.1-3.0 | 0 |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 21-28 | 15.0-35.0 | 1.3-9.0 | 4.1-7.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 28-60 | 2.0-13.9 | 1.0-10.0 | 4.5-7.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 60-152 | 2.0-13.9 | 1.0-10.0 | 4.9-6.9 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal taiga organic eolian slopes, frozen---- | 0-42 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-48 | 7.0-23.0 | 1.0-11.0 | 5.1-6.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 48-152 | 5.0-20.0 | 1.0-10.0 | 6.2-6.4 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal taiga gravelly colluvial slopes----- | 0-4 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 4-8 | 15.0-35.0 | 1.3-9.0 | 3.6-6.1 | 0 | 0 | 0.1-2.5 | 0 |
| | 8-36 | 12.0-30.0 | 1.3-8.8 | 4.9-6.0 | 0 | 0 | 0.1-2.5 | 0 |
| | 36-152 | 2.0-13.9 | 1.0-10.0 | 5.0-6.7 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal woodland silty eolian slopes, frozen---- | 0-25 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 25-50 | 5.0-20.0 | 1.3-6.1 | 4.2-6.2 | 0 | 0 | 0.1-2.5 | 0 |
| | 50-152 | 5.0-18.0 | 1.3-6.1 | 4.8-6.2 | 0 | 0 | 0.1-2.5 | 0 |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen---- | 0-42 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-48 | 7.0-23.0 | 1.0-11.0 | 5.1-6.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 48-152 | 5.0-20.0 | 1.0-10.0 | 6.2-6.4 | 0 | 0 | 0.1-2.5 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|--|--------|---------------------------------|--|------------------|----------------------|--------|----------|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31TL1: D31-Boreal taiga silty eolian slopes, frozen---- | 0-21 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 21-28 | 15.0-35.0 | 1.3-6.8 | 4.0-6.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 28-53 | 2.0-13.9 | 1.0-10.0 | 4.2-7.1 | 0 | 0 | 0.1-2.5 | 0 |
| | 53-152 | 2.0-10.5 | 1.0-10.0 | 5.1-7.0 | 0 | 0 | 0.1-2.5 | 0 |
| D31UC1: D31-Boreal tussock organic plains, frozen----- | 0-41 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 41-49 | 15.0-35.0 | 2.0-20.0 | 4.1-5.1 | 0 | 0 | 0.1-2.5 | 0 |
| | 49-56 | 5.0-20.0 | 1.0-10.0 | 4.5-5.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 56-152 | 5.0-20.0 | 1.0-10.0 | 4.3-6.5 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal taiga organic eolian slopes, frozen---- | 0-42 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-48 | 7.0-23.0 | 1.0-11.0 | 5.1-6.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 48-152 | 5.0-20.0 | 1.0-10.0 | 6.2-6.4 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal forest loamy high flood plains----- | 0-13 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-5.1 | 0 |
| | 13-18 | 2.0-7.7 | 2.0-20.0 | 4.9-7.2 | 0 | 0 | 0.1-5.1 | 0 |
| | 18-152 | 1.6-6.9 | 1.0-10.0 | 5.8-7.5 | 0 | 0 | 0.1-5.1 | 0 |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen----- | 0-21 | 65.2-103.4 | 15.0-47.0 | 4.4-7.0 | 0 | 0 | 0.1-2.0 | 0 |
| | 21-30 | 2.1-8.0 | 2.0-20.0 | 5.6-6.7 | 0 | 0 | 0.1-3.0 | 0 |
| | 30-64 | 2.0-7.9 | 1.0-10.0 | 5.8-7.1 | 0 | 0 | 0.1-3.0 | 0 |
| | 64-152 | 2.0-7.7 | 1.0-10.0 | 5.8-6.6 | 0 | 0 | 0.1-3.0 | 0 |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 0-21 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-3.0 | 0 |
| | 21-26 | 2.1-6.2 | 2.0-20.0 | 4.3-7.2 | 0 | 0 | 0.1-3.0 | 0 |
| | 26-58 | 2.0-9.6 | 1.0-10.0 | 4.7-7.3 | 0 | 0 | 0.1-3.0 | 0 |
| | 58-152 | 2.0-6.1 | 1.0-10.0 | 5.1-7.1 | 0 | 0 | 0.1-3.0 | 0 |
| D31UC3: D31-Boreal tussock organic plains, frozen----- | 0-41 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 41-49 | 15.0-35.0 | 2.0-20.0 | 4.1-5.1 | 0 | 0 | 0.1-2.5 | 0 |
| | 49-56 | 5.0-20.0 | 1.0-10.0 | 4.5-5.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 56-152 | 5.0-20.0 | 1.0-10.0 | 4.3-6.5 | 0 | 0 | 0.1-2.5 | 0 |

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Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|--|--------|---------------------------------|--|------------------|----------------------|--------|----------|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31UC3: D31-Boreal taiga silty colluvial slopes, frozen---- | 0-21 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 21-28 | 15.0-35.0 | 1.3-9.0 | 4.1-7.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 28-60 | 2.0-13.9 | 1.0-10.0 | 4.5-7.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 60-152 | 2.0-13.9 | 1.0-10.0 | 4.9-6.9 | 0 | 0 | 0.1-2.5 | 0 |
| D31UC4: D31-Boreal woodland rocky low flood plains-- | 0-30 | 0.9-6.9 | 1.0-10.0 | 5.9-7.7 | 0 | 0 | 0.1-2.5 | 0 |
| | 30-152 | 0.9-6.9 | 1.0-10.0 | 6.1-8.0 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal forest loamy high flood plains----- | 0-13 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-5.1 | 0 |
| | 13-18 | 2.0-7.7 | 2.0-20.0 | 4.9-7.2 | 0 | 0 | 0.1-5.1 | 0 |
| | 18-152 | 1.6-6.9 | 1.0-10.0 | 5.8-7.5 | 0 | 0 | 0.1-5.1 | 0 |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 0-10 | 42.0-91.0 | 15.6-61.7 | 3.4-5.0 | 0 | 0 | 0.0-3.0 | 0 |
| | 10-21 | 15.0-35.0 | 1.3-5.1 | 3.7-6.2 | 0 | 0 | 0.1-3.0 | 0 |
| | 21-37 | 2.0-7.7 | 1.0-9.0 | 4.1-6.9 | 0 | 0 | 0.1-3.0 | 0 |
| | 37-152 | 2.0-7.9 | 1.0-10.0 | 5.0-6.7 | 0 | 0 | 0.1-3.0 | 0 |
| D31-Alpine scrub gravelly circles, acid----- | 0-3 | 42.0-91.0 | 24.4-72.9 | 4.2-5.3 | 0 | 0 | 0.1-3.0 | 0 |
| | 3-12 | 15.0-35.0 | 1.3-5.1 | 4.3-5.6 | 0 | 0 | 0.1-3.0 | 0 |
| | 12-35 | 2.0-7.8 | 1.0-9.0 | 4.8-6.2 | 0 | 0 | 0.1-3.0 | 0 |
| | 35-152 | 2.0-7.9 | 1.0-10.0 | 4.9-6.3 | 0 | 0 | 0.1-3.0 | 0 |
| D31WA1: D31-Alpine water, ponded. | | | | | | | | |
| D31YV1: D31-Boreal forest loamy mid flood plains----- | 0-5 | 42.0-91.0 | 21.8-107.7 | 4.0-6.0 | 0-3 | 0 | 1.0-3.0 | 0 |
| | 5-76 | 2.0-6.1 | 2.0-15.0 | 7.5-8.1 | 0-3 | 0 | 1.0-3.0 | 0 |
| | 76-152 | 2.0-5.9 | 2.0-15.0 | 7.3-8.2 | 0-3 | 0 | 1.0-3.0 | 0 |
| D31-Boreal taiga loamy high flood plains, frozen---- | 0-9 | 65.2-103.4 | 15.0-47.0 | 3.5-6.0 | 0 | 0 | 1.0-3.0 | 0 |
| | 9-77 | 2.0-13.9 | 1.0-10.0 | 6.2-8.1 | 0 | 0 | 1.0-3.0 | 0 |
| | 77-152 | 2.0-13.9 | 1.0-10.0 | 6.2-8.0 | 0 | 0 | 1.0-3.0 | 0 |
| D31-Boreal scrub sandy low flood plains----- | 0-78 | 2.0-11.4 | 2.0-15.0 | 6.9-8.3 | 0-7 | 0 | 1.0-10.0 | 0 |
| | 78-152 | 2.0-11.4 | 2.0-20.0 | 7.1-8.3 | 0-7 | 0 | 1.0-10.0 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|--|--------|---------------------------------|--|------------------|----------------------|--------|----------|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | 42.0-91.0 | 19.5-96.3 | 3.8-5.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-54 | 5.0-20.0 | 1.0-10.0 | 5.2-7.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 54-152 | 5.0-20.0 | 1.0-10.0 | 5.0-7.0 | 0 | 0 | 0.1-2.5 | 0 |
| D31-Boreal taiga loamy high flood plains, frozen---- | 0-9 | 65.2-103.4 | 15.0-47.0 | 3.5-6.0 | 0 | 0 | 1.0-3.0 | 0 |
| | 9-77 | 2.0-13.9 | 1.0-10.0 | 6.2-8.1 | 0 | 0 | 1.0-3.0 | 0 |
| | 77-152 | 2.0-13.9 | 1.0-10.0 | 6.2-8.0 | 0 | 0 | 1.0-3.0 | 0 |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen----- | 0-42 | 42.0-91.0 | 19.5-96.3 | 3.8-5.8 | 0 | 0 | 0.1-2.5 | 0 |
| | 42-54 | 5.0-20.0 | 1.0-10.0 | 5.2-7.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 54-152 | 5.0-20.0 | 1.0-10.0 | 5.0-7.0 | 0 | 0 | 0.1-2.5 | 0 |
| D31YV8: D31-Boreal water, flowing. | | | | | | | | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen---- | 0-9 | 65.2-103.4 | 15.0-47.0 | 3.5-6.0 | 0 | 0 | 1.0-3.0 | 0 |
| | 9-77 | 2.0-13.9 | 1.0-10.0 | 6.2-8.1 | 0 | 0 | 1.0-3.0 | 0 |
| | 77-152 | 2.0-13.9 | 1.0-10.0 | 6.2-8.0 | 0 | 0 | 1.0-3.0 | 0 |
| D32TL1: D32-Boreal taiga organic plains, frozen----- | 0-41 | 42.0-91.0 | 15.6-77.1 | 3.4-5.4 | 0 | 0 | 0.1-1.0 | 0 |
| | 41-60 | 5.0-20.0 | 1.0-10.0 | 4.3-6.2 | 0 | 0 | 0.5-2.5 | 0 |
| | 60-152 | 5.0-20.0 | 1.0-10.0 | 4.6-6.5 | 0 | 0 | 0.5-2.0 | 0 |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 0-21 | 42.0-91.0 | 15.6-77.1 | 3.4-5.4 | 0 | 0 | 0.1-2.5 | 0 |
| | 21-56 | 2.0-9.6 | 1.0-10.0 | 4.4-7.5 | 0 | 0 | 0.5-3.0 | 0 |
| | 56-152 | 2.0-9.6 | 1.0-10.0 | 5.6-7.6 | 0 | 0 | 0.5-3.0 | 0 |
| D32-Boreal taiga loamy escarpment slopes----- | 0-8 | 1.8-7.0 | 2.0-20.0 | 6.5-7.5 | 0 | 0 | 0.1-2.5 | 0 |
| | 8-28 | 1.7-9.5 | 1.0-9.0 | 5.2-6.3 | 0 | 0 | 0.1-2.5 | 0 |
| | 28-152 | 1.6-9.1 | 1.0-10.0 | 6.5-7.0 | 0 | 0 | 0.1-2.5 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 10.--Chemical Properties of the Soils--Continued

| Map symbol and soil name | Depth | Cation- exchange capacity | Effective cation- exchange capacity | Soil reaction | Calcium carbonate | Gypsum | Salinity | Sodium adsorption ratio |
|---|--------|---------------------------------|--|------------------|----------------------|--------|----------|-------------------------------|
| | cm | meq/100 g | meq/100 g | pH | Pct | Pct | mmhos/cm | |
| D32TL2: D32-Boreal taiga silty eolian slopes, frozen---- | 0-11 | 42.0-91.0 | 15.6-81.5 | 3.4-5.5 | 0 | 0 | 0.1-1.0 | 0 |
| | 11-70 | 2.0-9.6 | 1.0-10.0 | 4.9-7.1 | 0 | 0 | 0.5-2.5 | 0 |
| | 70-152 | 2.0-9.6 | 1.0-10.0 | 7.5-7.7 | 0 | 0 | 0.5-2.0 | 0 |
| D32TL4: D32-Boreal taiga organic plains, frozen----- | 0-41 | 42.0-91.0 | 15.6-77.1 | 3.4-5.4 | 0 | 0 | 0.1-1.0 | 0 |
| | 41-60 | 5.0-20.0 | 1.0-10.0 | 4.3-6.2 | 0 | 0 | 0.5-2.5 | 0 |
| | 60-152 | 5.0-20.0 | 1.0-10.0 | 4.6-6.5 | 0 | 0 | 0.5-2.0 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 11.--Soil Carbon

(Soil organic carbon (SOC) and soil inorganic carbon (SIC) are given in kilograms per square meter to a depth of 2 meters or to the representative top depth of bedrock or a cemented soil horizon. SOC and SIC are reported on a volumetric whole soil basis, corrected for representative rock fragments. SOC is converted from horizon soil organic matter of the fraction of the soil less than 2 millimeters in diameter. If soil organic matter is indicated in the database as NULL, SOC is assumed to be zero. SIC is converted from the horizon calcium carbonate content fraction of the soil less than 2 millimeters in diameter. If the horizon calcium carbonate is indicated in the database as NULL, SIC is assumed to be zero. A weighted average of all horizons is used in the calculations. Only major components of the map units are given in the table.)

| Map unit symbol, component name, and percentage of map unit | SOC | SIC |
|---|-------|-------|
| | kg/m2 | kg/m2 |
| D31BH1: | | |
| D31-Boreal forest rocky colluvial slopes (34 percent)----- | 15 | 0 |
| D31-Boreal forest rocky sedimentary colluvial slopes (24 percent)---- | 13 | 1 |
| D31-Boreal taiga silty eolian slopes, frozen (17 percent)----- | 37 | 0 |
| D31BH2: | | |
| D31-Boreal forest rocky sedimentary colluvial slopes (39 percent)---- | 13 | 1 |
| D31-Boreal forest rocky colluvial escarpments (31 percent)----- | 9 | 1 |
| D31BH3: | | |
| D31-Boreal taiga silty eolian slopes, frozen (59 percent)----- | 37 | 0 |
| D31-Boreal taiga organic eolian slopes, frozen (33 percent)----- | 54 | 0 |
| D31BH5: | | |
| D31-Boreal taiga/tussock organic terraces, frozen (36 percent)----- | 53 | 0 |
| D31-Boreal forest loamy high flood plains (28 percent)----- | 62 | 0 |
| D31-Boreal scrub rocky Drainages (19 percent)----- | 13 | 0 |
| D31BH6: | | |
| D31-Boreal forest gravelly colluvial escarpments (56 percent)----- | 18 | 0 |
| D31-Boreal rubble land (25 percent)----- | 1 | 0 |
| D31BH7: | | |
| D31-Subalpine woodland rocky colluvial slopes (26 percent)----- | 5 | 0 |
| D31-Boreal forest rocky colluvial slopes (24 percent)----- | 15 | 0 |
| D31-Boreal forest gravelly colluvial slopes, frozen (20 percent)---- | 30 | 0 |
| D31CF1: | | |
| D31-Boreal forest gravelly colluvial slopes, frozen (32 percent)----- | 30 | 0 |
| D31-Boreal woodland silty eolian slopes, frozen (29 percent)----- | 34 | 0 |
| D31-Subalpine woodland silty colluvial slopes, frozen (20 percent)--- | 50 | 0 |
| D31HL1: | | |
| D31-Boreal taiga silty colluvial slopes, frozen (37 percent)----- | 102 | 0 |
| D31-Boreal taiga organic eolian slopes, frozen (27 percent)----- | 54 | 0 |
| D31HL2: | | |
| D31-Boreal taiga silty colluvial slopes, frozen (47 percent)----- | 102 | 0 |
| D31-Boreal taiga organic eolian slopes, frozen (43 percent)----- | 54 | 0 |
| D31KT1: | | |
| D31-Boreal taiga organic eolian slopes, frozen (79 percent)----- | 54 | 0 |
| D31LB1: | | |
| D31-Boreal taiga silty eolian slopes, frozen (31 percent)----- | 37 | 0 |
| D31-Boreal taiga organic eolian slopes, frozen (26 percent)----- | 54 | 0 |
| D31-Boreal forest rocky colluvial slopes (23 percent)----- | 15 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 11.--Soil Carbon--Continued

| Map unit symbol, component name, and percentage of map unit | SOC | SIC |
|---|-------|-------|
| | kg/m2 | kg/m2 |
| D31LB2: | | |
| D31-Boreal taiga silty colluvial slopes, frozen (36 percent)----- | 102 | 0 |
| D31-Boreal forest rocky sedimentary colluvial slopes (34 percent)---- | 13 | 1 |
| D31-Boreal forest rocky colluvial slopes (27 percent)----- | 15 | 0 |
| D31MT1: | | |
| D31-Alpine rubble land (66 percent)----- | 0 | 0 |
| D31-Alpine low scrub gravelly colluvial slopes (22 percent)----- | 13 | 0 |
| D31MT2: | | |
| D31-Alpine low scrub gravelly colluvial slopes (32 percent)----- | 13 | 0 |
| D31-Alpine scrub gravelly circles (30 percent)----- | 12 | 0 |
| D31-Alpine rubble land (24 percent)----- | 0 | 0 |
| D31MT3: | | |
| D31-Alpine low scrub organic hummocks, frozen (25 percent)----- | 87 | 0 |
| D31-Alpine scrub loamy hummocks, frozen (25 percent)----- | 38 | 0 |
| D31-Alpine low scrub loamy solifluction lobes (22 percent)----- | 18 | 0 |
| D31OF1: | | |
| D31-Boreal forest gravelly colluvial slopes, frozen (27 percent)----- | 30 | 0 |
| D31-Boreal woodland silty eolian slopes, frozen (24 percent)----- | 34 | 0 |
| D31-Boreal forest rocky sedimentary colluvial slopes (21 percent)---- | 13 | 1 |
| D31OM1: | | |
| D31-Alpine scrub silty circles (57 percent)----- | 16 | 5 |
| D31-Alpine rubble land (30 percent)----- | 0 | 0 |
| D31OM2: | | |
| D31-Alpine scrub silty circles (60 percent)----- | 16 | 5 |
| D31-Subalpine woodland silty colluvial slopes, frozen (18 percent)--- | 50 | 0 |
| D31SD1: | | |
| D31-Alpine low scrub organic hummocks, frozen (48 percent)----- | 87 | 0 |
| D31-Alpine tussock-scrub silty polygons, frozen (29 percent)----- | 43 | 0 |
| D31TE1: | | |
| D31-Boreal taiga/tussock organic terraces, frozen (62 percent)----- | 53 | 0 |
| D31-Boreal taiga silty terraces, frozen (20 percent)----- | 35 | 0 |
| D31TE2: | | |
| D31-Boreal taiga/tussock organic terraces, frozen (78 percent)----- | 53 | 0 |
| D31TF1: | | |
| D31-Subalpine woodland silty colluvial slopes (55 percent)----- | 26 | 0 |
| D31-Subalpine scrub loamy residual slopes (34 percent)----- | 20 | 0 |
| D31TF2: | | |
| D31-Subalpine tussock-scrub loamy colluvial slopes, frozen (45 percent)----- | 38 | 0 |
| D31-Subalpine scrub silty till slopes (41 percent)----- | 20 | 0 |
| D31TH1: | | |
| D31-Boreal taiga silty colluvial slopes, frozen (28 percent)----- | 102 | 0 |
| D31-Boreal taiga organic eolian slopes, frozen (22 percent)----- | 54 | 0 |
| D31-Boreal taiga gravelly colluvial slopes (19 percent)----- | 15 | 0 |
| D31-Boreal woodland silty eolian slopes, frozen (17 percent)----- | 34 | 0 |
| D31TL1: | | |
| D31-Boreal taiga organic eolian slopes, frozen (44 percent)----- | 54 | 0 |
| D31-Boreal taiga silty eolian slopes, frozen (39 percent)----- | 37 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 11.--Soil Carbon--Continued

| Map unit symbol, component name, and percentage of map unit | SOC | SIC |
|---|-------|-------|
| | kg/m2 | kg/m2 |
| D31UC1: | | |
| D31-Boreal tussock organic plains, frozen (42 percent)----- | 87 | 0 |
| D31-Boreal taiga organic eolian slopes, frozen (24 percent)----- | 54 | 0 |
| D31-Boreal forest loamy high flood plains (21 percent)----- | 62 | 0 |
| D31UC2: | | |
| D31-Subalpine woodland silty colluvial slopes, frozen (40 percent)--- | 50 | 0 |
| D31-Boreal forest gravelly colluvial slopes, frozen (31 percent)----- | 30 | 0 |
| D31UC3: | | |
| D31-Boreal tussock organic plains, frozen (65 percent)----- | 87 | 0 |
| D31-Boreal taiga silty colluvial slopes, frozen (18 percent)----- | 102 | 0 |
| D31UC4: | | |
| D31-Boreal woodland rocky low flood plains (32 percent)----- | 5 | 0 |
| D31-Boreal forest loamy high flood plains (25 percent)----- | 62 | 0 |
| D31UC5: | | |
| D31-Subalpine scrub silty till slopes (35 percent)----- | 20 | 0 |
| D31-Alpine scrub gravelly circles, acid (30 percent)----- | 15 | 0 |
| D31WA1: | | |
| D31-Alpine water, ponded (95 percent)----- | 0 | 0 |
| D31YV1: | | |
| D31-Boreal forest loamy mid flood plains (36 percent)----- | 42 | 2 |
| D31-Boreal taiga loamy high flood plains, frozen (32 percent)----- | 68 | 0 |
| D31-Boreal scrub sandy low flood plains (26 percent)----- | 20 | 2 |
| D31YV2: | | |
| D31-Boreal taiga/tussock organic terraces, frozen (55 percent)----- | 53 | 0 |
| D31-Boreal taiga loamy high flood plains, frozen (32 percent)----- | 68 | 0 |
| D31YV3: | | |
| D31-Boreal taiga/tussock organic terraces, frozen (90 percent)----- | 53 | 0 |
| D31YV8: | | |
| D31-Boreal water, flowing (70 percent)----- | 0 | 0 |
| D31YV9: | | |
| D31-Boreal taiga loamy high flood plains, frozen (78 percent)----- | 68 | 0 |
| D32TL1: | | |
| D32-Boreal taiga organic plains, frozen (79 percent)----- | 53 | 0 |
| D32TL2: | | |
| D32-Boreal forest gravelly escarpments, frozen (40 percent)----- | 33 | 0 |
| D32-Boreal taiga loamy escarpment slopes (30 percent)----- | 12 | 0 |
| D32-Boreal taiga silty eolian slopes, frozen (20 percent)----- | 29 | 0 |
| D32TL4: | | |
| D32-Boreal taiga organic plains, frozen (83 percent)----- | 53 | 0 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features

(See text for definitions of terms used in this table. Absence of an entry indicates that the feature is not a concern or that data were not estimated.

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|--|-------------------|-----------------|-----------|---------------------------------|------------|--------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31BH1: D31-Boreal forest rocky colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Low |
| D31-Boreal taiga silty eolian slopes, frozen | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Boreal taiga silty colluvial slopes, frozen----- | Permafrost | 50-100 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |
| D31-Boreal woodland silty eolian slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Boreal taiga silty drainages, frozen---- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | High | Moderate |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Low |
| D31-Boreal forest rocky colluvial escarpments----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Low |
| D31-Boreal forest rocky colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal scrub rocky colluvial escarpments | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Low |
| D31-Boreal bedrock---- | Lithic bedrock | 0-0 | --- | Indurated | 0 | 0 | Low | Low | Low |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Boreal taiga organic eolian slopes, frozen----- | Permafrost | 40-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal woodland gravelly residual slopes----- | No restriction | --- | --- | --- | 0 | 0 | Low | Low | Moderate |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|---|-------------------|-----------------|-----------|---------------------------------|------------|---------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal forest loamy high flood plains----- | No restriction | --- | --- | --- | 0 | 0 | Low | Low | Moderate |
| D31-Boreal scrub rocky drainages----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Moderate | Moderate |
| D31-Boreal woodland rocky low flood plains | No restriction | --- | --- | --- | 0 | 0 | Low | Low | Low |
| D31-Boreal water, flowing----- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | Moderate |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal rubble land | Lithic bedrock | 45-60 | --- | Indurated | 0 | 0 | Low | Low | Low |
| D31-Boreal forest loamy depressions, frozen----- | Permafrost | 50-115 | --- | Strongly cemented, frozen | 40-85 | 60-120 | Moderate | Moderate | Moderate |
| D31-Boreal taiga gravelly drainages---- | Permafrost | 50-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal forest rocky colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | Permafrost | 50-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Low |
| D31-Boreal woodland silty eolian slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Boreal scrub rocky drainages----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Moderate | Moderate |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|---|-------------------|-----------------|-----------|---------------------------------|------------|--------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | Permafrost | 50-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31-Boreal woodland silty eolian slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31-Subalpine woodland rocky residual slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal taiga gravelly drainages---- | Permafrost | 50-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen----- | Permafrost | 50-100 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |
| D31-Boreal taiga organic eolian slopes, frozen----- | Permafrost | 40-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal scrub rocky drainages----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Moderate | Moderate |
| D31-Boreal woodland rocky low flood plains | No restriction | --- | --- | --- | 0 | 0 | Low | Low | Low |
| D31-Boreal forest loamy high flood plains, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen----- | Permafrost | 50-100 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |
| D31-Boreal taiga organic eolian slopes, frozen----- | Permafrost | 40-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal taiga silty drainages, frozen---- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | High | Moderate |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|---|-------------------|-----------------|-----------|---------------------------------|------------|---------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen----- | Permafrost | 40-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal taiga silty eolian slopes, frozen | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Boreal moss organic depressions--- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | High |
| D31-Boreal scrub-sedge organic depressions--- | No restriction | --- | --- | --- | 60-105 | 90-150 | High | High | High |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Boreal taiga organic eolian slopes, frozen----- | Permafrost | 40-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal forest rocky colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Low |
| D31-Boreal taiga silty drainages, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | High | Moderate |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen----- | Permafrost | 50-100 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Low |
| D31-Boreal forest rocky colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal scrub rocky colluvial escarpments | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Low |
| D31MT1: D31-Alpine rubble land | No restriction | --- | --- | --- | 0 | 0 | High | Low | Moderate |
| D31-Alpine low scrub gravelly colluvial slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Alpine scrub gravelly circles----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | High |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|---|-------------------|-----------------|-----------|---------------------------------|------------|--------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31MT1: D31-Alpine scrub gravelly circles, acid | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | High |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Alpine scrub gravelly circles----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | High |
| D31-Alpine rubble land | No restriction | --- | --- | --- | 0 | 0 | High | Low | Moderate |
| D31-Alpine scrub gravelly circles, acid | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | High |
| D31-Alpine scrub loamy hummocks, frozen----- | Permafrost | 50-80 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | Permafrost | 39-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Alpine scrub loamy hummocks, frozen----- | Permafrost | 50-80 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D31-Alpine low scrub loamy solifluction lobes----- | No restriction | --- | --- | --- | 0 | 0 | Low | Moderate | Moderate |
| D31-Subalpine scrub silty till slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Moderate |
| D31-Alpine scrub gravelly circles, acid | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | High |
| D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | Permafrost | 50-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31-Boreal woodland silty eolian slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Low |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|---|-------------------|-----------------|-----------|---------------------------------|------------|--------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31OF1: D31-Boreal forest rocky colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal woodland rocky colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal scrub rocky drainages----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Moderate | Moderate |
| D31OM1: D31-Alpine scrub silty circles----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Moderate | Low |
| D31-Alpine rubble land | No restriction | --- | --- | --- | 0 | 0 | High | Low | Moderate |
| D31-Alpine bedrock---- | Lithic bedrock | 0-0 | --- | Indurated | 0 | 0 | Low | Low | Moderate |
| D31OM2: D31-Alpine scrub silty circles----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Moderate | Low |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31-Alpine bedrock---- | Lithic bedrock | 0-0 | --- | Indurated | 0 | 0 | Low | Low | Moderate |
| D31-Subalpine woodland silty colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | High | High | Moderate |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | Permafrost | 39-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Alpine tussock-scrub silty Polygons, frozen----- | Permafrost | 40-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D31-Subalpine woodland silty colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | High | High | Moderate |
| D31-Subalpine scrub loamy colluvial slopes, frozen----- | Permafrost | 50-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Alpine rubble land | No restriction | --- | --- | --- | 0 | 0 | High | Low | Moderate |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal taiga silty terraces, frozen----- | Permafrost | 50-115 | --- | Strongly cemented, frozen | 10-40 | 10-60 | Moderate | Moderate | Moderate |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|---|-------------------|-----------------|-----------|---------------------------------|------------|---------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31TE1: D31-Boreal forest silty drainages, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | High | Moderate |
| D31-Boreal grass organic depressions--- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | High |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal forest silty drainages, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | High | Moderate |
| D31-Boreal grass organic depressions--- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | High |
| D31TF1: D31-Subalpine woodland silty colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | High | High | Moderate |
| D31-Subalpine scrub loamy residual slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Subalpine scrub rocky drainages----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Moderate |
| D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D31-Subalpine scrub silty till slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Moderate |
| D31-Subalpine scrub rocky drainages----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Moderate |
| D31-Subalpine grass organic swales----- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | Moderate |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen----- | Permafrost | 50-100 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|--|-------------------|-----------------|-----------|---------------------------------|------------|---------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31TH1: D31-Boreal taiga organic eolian slopes, frozen----- | Permafrost | 40-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal taiga gravelly colluvial slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Boreal woodland silty eolian slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Boreal forest loamy depressions, frozen----- | Permafrost | 50-115 | --- | Strongly cemented, frozen | 40-85 | 60-120 | Moderate | Moderate | Moderate |
| D31-Boreal taiga silty drainages, frozen---- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | High | Moderate |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | Permafrost | 40-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal taiga silty eolian slopes, frozen | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | Moderate |
| D31-Boreal forest loamy colluvial slopes | Permafrost | 50-100 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |
| D31-Boreal taiga gravelly drainages---- | Permafrost | 50-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31-Boreal moss organic depressions--- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | High |
| D31UC1: D31-Boreal tussock organic plains, frozen | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | High |
| D31-Boreal taiga organic eolian slopes, frozen----- | Permafrost | 40-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal forest loamy high flood plains----- | No restriction | --- | --- | --- | 0 | 0 | Low | Low | Moderate |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|---|-------------------|-----------------|-----------|---------------------------------|------------|---------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31UC1: D31-Boreal woodland rocky low flood plains | No restriction | --- | --- | --- | 0 | 0 | Low | Low | Low |
| D31-Boreal water, flowing----- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | Moderate |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | Permafrost | 50-90 | --- | Strongly cemented, frozen | 10-40 | 10-60 | High | Moderate | Moderate |
| D31-Subalpine woodland rocky colluvial slopes, Cold----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31-Subalpine scrub loamy colluvial slopes, frozen----- | Permafrost | 50-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal scrub rocky drainages----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | Moderate | Moderate |
| D31UC3: D31-Boreal tussock organic plains, frozen | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | High |
| D31-Boreal taiga silty colluvial slopes, frozen----- | Permafrost | 50-100 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |
| D31-Boreal taiga silty drainages, frozen---- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | High | Moderate |
| D31-Boreal forest rocky colluvial slopes | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | Moderate |
| D31UC4: D31-Boreal woodland rocky low flood plains | No restriction | --- | --- | --- | 0 | 0 | Low | Low | Low |
| D31-Boreal forest loamy high flood plains----- | No restriction | --- | --- | --- | 0 | 0 | Low | Low | Moderate |
| D31-Boreal taiga/tussock organic terraces, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal scrub organic depressions--- | No restriction | --- | --- | --- | 0 | 0 | High | High | Moderate |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|--|-------------------|-----------------|-----------|---------------------------------|------------|---------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31UC4: D31-Boreal riverwash--- | No restriction | --- | --- | --- | 0 | 0 | Low | High | Moderate |
| D31-Boreal forest loamy high flood plains, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |
| D31UC5: D31-Subalpine scrub silty till slopes----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Moderate |
| D31-Alpine scrub gravelly circles, acid | No restriction | --- | --- | --- | 0 | 0 | Moderate | Low | High |
| D31-Alpine scrub loamy hummocks, frozen----- | Permafrost | 50-80 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D31-Subalpine scrub rocky drainages----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Moderate |
| D31WA1: D31-Alpine water, ponded----- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | Moderate |
| D31-Subalpine scrub rocky drainages----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Moderate |
| D31YV1: D31-Boreal forest loamy mid flood plains | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Low |
| D31-Boreal taiga loamy high flood plains, frozen----- | Permafrost | 50-120 | --- | Strongly cemented, frozen | 40-85 | 60-120 | Moderate | High | Moderate |
| D31-Boreal scrub sandy low flood plains----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Low |
| D31-Boreal riverwash--- | No restriction | --- | --- | --- | 0 | 0 | Low | High | Moderate |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal taiga loamy high flood plains, frozen----- | Permafrost | 50-120 | --- | Strongly cemented, frozen | 40-85 | 60-120 | Moderate | High | Moderate |
| D31-Boreal water, ponded----- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | Moderate |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|---|-------------------|-----------------|-----------|---------------------------------|------------|---------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D31YV2: D31-Boreal scrub organic depressions--- | No restriction | --- | --- | --- | 0 | 0 | High | High | Moderate |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | High | Moderate |
| D31-Boreal grass organic depressions--- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | High |
| D31YV8: D31-Boreal water, flowing----- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | High | Moderate |
| D31-Boreal scrub sandy low flood plains----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Low |
| D31-Boreal riverwash--- | No restriction | --- | --- | --- | 0 | 0 | Low | High | Moderate |
| D31-Boreal forest loamy mid flood plains | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Low |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | Permafrost | 50-120 | --- | Strongly cemented, frozen | 40-85 | 60-120 | Moderate | High | Moderate |
| D31-Boreal scrub sandy low flood plains----- | No restriction | --- | --- | --- | 0 | 0 | Moderate | High | Low |
| D31-Boreal scrub organic depressions--- | No restriction | --- | --- | --- | 0 | 0 | High | High | Moderate |
| D31-Boreal scrub loamy depressions----- | No restriction | --- | --- | --- | 0 | 0 | High | Moderate | Moderate |
| D32TL1: D32-Boreal taiga organic plains, frozen | Permafrost | 50-100 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D32-Boreal woodland loamy drainages, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | High |
| D32-Boreal forest gravelly escarpments, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |
| D32-Boreal moss organic depressions--- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | Moderate | High |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | Moderate |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 12.--Soil Features--Continued

| Map symbol and soil name | Restrictive layer | | | | Subsidence | | Potential for frost action | Risk of corrosion | |
|---|-------------------|-----------------|-----------|---------------------------------|------------|---------|----------------------------------|-------------------|----------|
| | Kind | Depth to top | Thickness | Hardness | Initial | Total | | Uncoated steel | Concrete |
| | | cm | cm | | cm | cm | | | |
| D32TL2: D32-Boreal taiga loamy Escarpment slopes----- | No restriction | --- | --- | --- | 0 | 0 | Low | Moderate | Low |
| D32-Boreal taiga silty eolian slopes, frozen | Permafrost | 50-120 | --- | Strongly cemented, frozen | 40-85 | 60-120 | Moderate | High | Moderate |
| D32-Boreal taiga organic plains, frozen | Permafrost | 50-100 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D32-Boreal woodland loamy drainages, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | High |
| D32TL4: D32-Boreal taiga organic plains, frozen | Permafrost | 50-100 | --- | Strongly cemented, frozen | 60-105 | 90-150 | High | Moderate | High |
| D32-Boreal woodland loamy drainages, frozen----- | Permafrost | 45-90 | --- | Strongly cemented, frozen | 40-85 | 60-120 | High | Moderate | High |
| D32-Boreal moss organic depressions--- | No restriction | --- | --- | --- | 70-140 | 100-200 | High | Moderate | High |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features

(See text for definitions of terms used in this table. Estimates of the frequency of ponding and flooding apply to the whole year rather than to individual months. Absence of an entry indicates that the feature is not a concern or that data were not estimated. Depth to water table is based on a representative value. In the "Water table" column, more than one value given for a month for the upper and lower limits indicates that the soil has both a perched and an apparent water table.)

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|---|--------------------------|-----------|----------------|----------------|---------------------------|----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31BH1: D31-Boreal forest rocky colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Boreal taiga silty eolian slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Boreal forest rocky colluvial escarpments----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|--|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|------------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31BH3: D31-Boreal taiga organic eolian slopes, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31-Boreal forest loamy high flood plains----- | A | May | --- | --- | --- | --- | None | Very brief | Rare |
| | | June | --- | --- | --- | --- | None | Very brief | Rare |
| | | July | --- | --- | --- | --- | None | Very brief | Rare |
| | | August | --- | --- | --- | --- | None | Very brief | Rare |
| | | September | --- | --- | --- | --- | None | Very brief | Rare |
| D31-Boreal scrub rocky drainages---- | B/D | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Boreal rubble land----- | D | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Boreal forest rocky colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|--|--------------------------|-----------|----------------|----------------|---------------------------|----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31BH7: D31-Boreal forest gravelly colluvial slopes frozen----- | D | January | 10 | 152 | --- | --- | None | --- | None |
| | | February | 10 | 152 | --- | --- | None | --- | None |
| | | March | 10 | 152 | --- | --- | None | --- | None |
| | | April | 10 | 152 | --- | --- | None | --- | None |
| | | May | 10 | 152 | --- | --- | None | --- | None |
| | | June | 25 | 152 | --- | --- | None | --- | None |
| | | July | 35 | 152 | --- | --- | None | --- | None |
| | | August | 60 | 152 | --- | --- | None | --- | None |
| | | September | 60 | 152 | --- | --- | None | --- | None |
| | | October | 40 | 152 | --- | --- | None | --- | None |
| | | November | 25 | 152 | --- | --- | None | --- | None |
| | | December | 10 | 152 | --- | --- | None | --- | None |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | D | January | 10 | 152 | --- | --- | None | --- | None |
| | | February | 10 | 152 | --- | --- | None | --- | None |
| | | March | 10 | 152 | --- | --- | None | --- | None |
| | | April | 10 | 152 | --- | --- | None | --- | None |
| | | May | 10 | 152 | --- | --- | None | --- | None |
| | | June | 25 | 152 | --- | --- | None | --- | None |
| | | July | 35 | 152 | --- | --- | None | --- | None |
| | | August | 60 | 152 | --- | --- | None | --- | None |
| | | September | 60 | 152 | --- | --- | None | --- | None |
| | | October | 40 | 152 | --- | --- | None | --- | None |
| | | November | 25 | 152 | --- | --- | None | --- | None |
| | | December | 10 | 152 | --- | --- | None | --- | None |
| D31-Boreal woodland silty eolian slopes, frozen----- | D | January | 8 | 152 | --- | --- | None | --- | None |
| | | February | 8 | 152 | --- | --- | None | --- | None |
| | | March | 8 | 152 | --- | --- | None | --- | None |
| | | April | 8 | 152 | --- | --- | None | --- | None |
| | | May | 8 | 152 | --- | --- | None | --- | None |
| | | June | 8 | 152 | --- | --- | None | --- | None |
| | | July | 8 | 152 | --- | --- | None | --- | None |
| | | August | 8 | 152 | --- | --- | None | --- | None |
| | | September | 8 | 152 | --- | --- | None | --- | None |
| | | October | 8 | 152 | --- | --- | None | --- | None |
| | | November | 8 | 152 | --- | --- | None | --- | None |
| | | December | 8 | 152 | --- | --- | None | --- | None |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|--|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |
| D31-Boreal taiga organic eolian slopes, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |
| D31-Boreal taiga organic eolian slopes, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|--|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |
| D31-Boreal taiga organic eolian slopes, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31-Boreal forest rocky colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|---|--------------------------|-----------|----------------|----------------|---------------------------|----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31LB2: D31-Boreal forest rocky sedimentary colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Boreal forest rocky colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31MT1: D31-Alpine rubble land----- | D | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Alpine low scrub gravelly colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Alpine scrub gravelly circles--- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Alpine rubble land----- | D | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | D | January | 5 | 152 | --- | --- | None | --- | None |
| | | February | 5 | 152 | --- | --- | None | --- | None |
| | | March | 5 | 152 | --- | --- | None | --- | None |
| | | April | 5 | 152 | --- | --- | None | --- | None |
| | | May | 5 | 152 | --- | --- | None | --- | None |
| | | June | 15 | 152 | --- | --- | None | --- | None |
| | | July | 25 | 152 | --- | --- | None | --- | None |
| | | August | 30 | 152 | --- | --- | None | --- | None |
| | | September | 30 | 152 | --- | --- | None | --- | None |
| | | October | 25 | 152 | --- | --- | None | --- | None |
| | | November | 10 | 152 | --- | --- | None | --- | None |
| | | December | 5 | 152 | --- | --- | None | --- | None |
| D31-Alpine scrub loamy hummocks, frozen----- | D | January | 5 | 152 | --- | --- | None | --- | None |
| | | February | 5 | 152 | --- | --- | None | --- | None |
| | | March | 5 | 152 | --- | --- | None | --- | None |
| | | April | 5 | 152 | --- | --- | None | --- | None |
| | | May | 5 | 152 | --- | --- | None | --- | None |
| | | June | 15 | 152 | --- | --- | None | --- | None |
| | | July | 25 | 152 | --- | --- | None | --- | None |
| | | August | 30 | 152 | --- | --- | None | --- | None |
| | | September | 30 | 152 | --- | --- | None | --- | None |
| | | October | 25 | 152 | --- | --- | None | --- | None |
| | | November | 10 | 152 | --- | --- | None | --- | None |
| | | December | 5 | 152 | --- | --- | None | --- | None |
| D31-Alpine low scrub loamy solifluction lobes----- | B/D | Jan-Dec | --- | --- | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|--|--------------------------|-----------|----------------|----------------|---------------------------|----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | D | January | 10 | 152 | --- | --- | None | --- | None |
| | | February | 10 | 152 | --- | --- | None | --- | None |
| | | March | 10 | 152 | --- | --- | None | --- | None |
| | | April | 10 | 152 | --- | --- | None | --- | None |
| | | May | 10 | 152 | --- | --- | None | --- | None |
| | | June | 25 | 152 | --- | --- | None | --- | None |
| | | July | 35 | 152 | --- | --- | None | --- | None |
| | | August | 60 | 152 | --- | --- | None | --- | None |
| | | September | 60 | 152 | --- | --- | None | --- | None |
| | | October | 40 | 152 | --- | --- | None | --- | None |
| | | November | 25 | 152 | --- | --- | None | --- | None |
| | | December | 10 | 152 | --- | --- | None | --- | None |
| D31-Boreal woodland silty eolian slopes, frozen----- | D | January | 8 | 152 | --- | --- | None | --- | None |
| | | February | 8 | 152 | --- | --- | None | --- | None |
| | | March | 8 | 152 | --- | --- | None | --- | None |
| | | April | 8 | 152 | --- | --- | None | --- | None |
| | | May | 8 | 152 | --- | --- | None | --- | None |
| | | June | 8 | 152 | --- | --- | None | --- | None |
| | | July | 8 | 152 | --- | --- | None | --- | None |
| | | August | 8 | 152 | --- | --- | None | --- | None |
| | | September | 8 | 152 | --- | --- | None | --- | None |
| | | October | 8 | 152 | --- | --- | None | --- | None |
| | | November | 8 | 152 | --- | --- | None | --- | None |
| | | December | 8 | 152 | --- | --- | None | --- | None |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31OM1: D31-Alpine scrub silty circles----- | B | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Alpine rubble land----- | D | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31OM2: D31-Alpine scrub silty circles----- | B | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|--|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | D | January | 5 | 152 | --- | --- | None | --- | None |
| | | February | 5 | 152 | --- | --- | None | --- | None |
| | | March | 5 | 152 | --- | --- | None | --- | None |
| | | April | 5 | 152 | --- | --- | None | --- | None |
| | | May | 5 | 152 | --- | --- | None | --- | None |
| | | June | 15 | 152 | --- | --- | None | --- | None |
| | | July | 25 | 152 | --- | --- | None | --- | None |
| | | August | 30 | 152 | --- | --- | None | --- | None |
| | | September | 30 | 152 | --- | --- | None | --- | None |
| | | October | 25 | 152 | --- | --- | None | --- | None |
| | | November | 10 | 152 | --- | --- | None | --- | None |
| | | December | 5 | 152 | --- | --- | None | --- | None |
| D31-Alpine tussock-scrub silty polygons, frozen----- | D | January | 5 | 152 | --- | --- | None | --- | None |
| | | February | 5 | 152 | --- | --- | None | --- | None |
| | | March | 5 | 152 | --- | --- | None | --- | None |
| | | April | 5 | 152 | --- | --- | None | --- | None |
| | | May | 5 | 152 | --- | --- | None | --- | None |
| | | June | 15 | 152 | --- | --- | None | --- | None |
| | | July | 25 | 152 | --- | --- | None | --- | None |
| | | August | 30 | 152 | --- | --- | None | --- | None |
| | | September | 30 | 152 | --- | --- | None | --- | None |
| | | October | 25 | 152 | --- | --- | None | --- | None |
| | | November | 10 | 152 | --- | --- | None | --- | None |
| | | December | 5 | 152 | --- | --- | None | --- | None |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31-Boreal taiga silty terraces, frozen----- | D | January | 10 | 152 | --- | --- | None | --- | None |
| | | February | 10 | 152 | --- | --- | None | --- | None |
| | | March | 10 | 152 | --- | --- | None | --- | None |
| | | April | 10 | 152 | --- | --- | None | --- | None |
| | | May | 10 | 152 | --- | --- | None | --- | None |
| | | June | 25 | 152 | --- | --- | None | --- | None |
| | | July | 35 | 152 | --- | --- | None | --- | None |
| | | August | 60 | 152 | --- | --- | None | --- | None |
| | | September | 60 | 152 | --- | --- | None | --- | None |
| | | October | 40 | 152 | --- | --- | None | --- | None |
| | | November | 25 | 152 | --- | --- | None | --- | None |
| | | December | 10 | 152 | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|---|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31TF1: D31-Subalpine woodland silty colluvial slopes----- | C/D | January | 5 | 152 | --- | --- | None | --- | None |
| | | February | 5 | 152 | --- | --- | None | --- | None |
| | | March | 5 | 152 | --- | --- | None | --- | None |
| | | April | 5 | 152 | --- | --- | None | --- | None |
| | | May | 5 | 152 | --- | --- | None | --- | None |
| | | June | 10 | 152 | --- | --- | None | --- | None |
| | | July | 35 | 152 | --- | --- | None | --- | None |
| | | August | 45 | 152 | --- | --- | None | --- | None |
| | | September | 45 | 152 | --- | --- | None | --- | None |
| | | October | 35 | 152 | --- | --- | None | --- | None |
| | | November | 25 | 152 | --- | --- | None | --- | None |
| | | December | 5 | 152 | --- | --- | None | --- | None |
| D31-Subalpine scrub loamy residual slopes----- | B | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | D | January | 5 | 152 | --- | --- | None | --- | None |
| | | February | 5 | 152 | --- | --- | None | --- | None |
| | | March | 5 | 152 | --- | --- | None | --- | None |
| | | April | 5 | 152 | --- | --- | None | --- | None |
| | | May | 5 | 152 | --- | --- | None | --- | None |
| | | June | 15 | 152 | --- | --- | None | --- | None |
| | | July | 25 | 152 | --- | --- | None | --- | None |
| | | August | 30 | 152 | --- | --- | None | --- | None |
| | | September | 30 | 152 | --- | --- | None | --- | None |
| | | October | 25 | 152 | --- | --- | None | --- | None |
| | | November | 10 | 152 | --- | --- | None | --- | None |
| | | December | 5 | 152 | --- | --- | None | --- | None |
| D31-Subalpine scrub silty till slopes----- | B | Jan-Dec | --- | --- | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|--|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |
| D31-Boreal taiga organic eolian slopes, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31-Boreal taiga gravelly colluvial slopes----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Boreal woodland silty eolian slopes, frozen----- | D | January | 8 | 152 | --- | --- | None | --- | None |
| | | February | 8 | 152 | --- | --- | None | --- | None |
| | | March | 8 | 152 | --- | --- | None | --- | None |
| | | April | 8 | 152 | --- | --- | None | --- | None |
| | | May | 8 | 152 | --- | --- | None | --- | None |
| | | June | 8 | 152 | --- | --- | None | --- | None |
| | | July | 8 | 152 | --- | --- | None | --- | None |
| | | August | 8 | 152 | --- | --- | None | --- | None |
| | | September | 8 | 152 | --- | --- | None | --- | None |
| | | October | 8 | 152 | --- | --- | None | --- | None |
| | | November | 8 | 152 | --- | --- | None | --- | None |
| | | December | 8 | 152 | --- | --- | None | --- | None |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|---|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|------------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31TL1: D31-Boreal taiga silty eolian slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |
| D31UC1: D31-Boreal tussock organic plains, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31-Boreal taiga organic eolian slopes, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31-Boreal forest loamy high flood plains----- | A | May | --- | --- | --- | --- | None | Very brief | Rare |
| | | June | --- | --- | --- | --- | None | Very brief | Rare |
| | | July | --- | --- | --- | --- | None | Very brief | Rare |
| | | August | --- | --- | --- | --- | None | Very brief | Rare |
| | | September | --- | --- | --- | --- | None | Very brief | Rare |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|--|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | D | January | 10 | 152 | --- | --- | None | --- | None |
| | | February | 10 | 152 | --- | --- | None | --- | None |
| | | March | 10 | 152 | --- | --- | None | --- | None |
| | | April | 10 | 152 | --- | --- | None | --- | None |
| | | May | 10 | 152 | --- | --- | None | --- | None |
| | | June | 25 | 152 | --- | --- | None | --- | None |
| | | July | 35 | 152 | --- | --- | None | --- | None |
| | | August | 60 | 152 | --- | --- | None | --- | None |
| | | September | 60 | 152 | --- | --- | None | --- | None |
| | | October | 40 | 152 | --- | --- | None | --- | None |
| | | November | 25 | 152 | --- | --- | None | --- | None |
| | | December | 10 | 152 | --- | --- | None | --- | None |
| D31UC3: D31-Boreal tussock organic plains, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31-Boreal taiga silty colluvial slopes, frozen----- | D | January | 50 | 152 | --- | --- | None | --- | None |
| | | February | 50 | 152 | --- | --- | None | --- | None |
| | | March | 50 | 152 | --- | --- | None | --- | None |
| | | April | 50 | 152 | --- | --- | None | --- | None |
| | | May | 50 | 152 | --- | --- | None | --- | None |
| | | June | 50 | 152 | --- | --- | None | --- | None |
| | | July | 50 | 152 | --- | --- | None | --- | None |
| | | August | 50 | 152 | --- | --- | None | --- | None |
| | | September | 50 | 152 | --- | --- | None | --- | None |
| | | October | 50 | 152 | --- | --- | None | --- | None |
| | | November | 50 | 152 | --- | --- | None | --- | None |
| | | December | 50 | 152 | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|---|--------------------------|-----------|----------------|----------------|---------------------------|----------|-----------|------------|------------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31UC4: D31-Boreal woodland rocky Low flood plains----- | B | April | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | May | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | June | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | July | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | August | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | September | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | October | 0 | 152 | --- | --- | None | Brief | Frequent |
| D31-Boreal forest loamy high flood plains----- | A | May | --- | --- | --- | --- | None | Very brief | Rare |
| | | June | --- | --- | --- | --- | None | Very brief | Rare |
| | | July | --- | --- | --- | --- | None | Very brief | Rare |
| | | August | --- | --- | --- | --- | None | Very brief | Rare |
| | | September | --- | --- | --- | --- | None | Very brief | Rare |
| D31UC5: D31-Subalpine scrub silty till slopes----- | B | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31-Alpine scrub gravelly circles, acid----- | A | Jan-Dec | --- | --- | --- | --- | None | --- | None |
| D31WA1: D31-Alpine water, ponded----- | D | --- | --- | --- | --- | --- | --- | --- | --- |
| D31YV1: D31-Boreal forest loamy mid flood plains----- | B | April | 0 | 60 | --- | --- | None | Brief | Occasional |
| | | May | 0 | 60 | --- | --- | None | Brief | Occasional |
| | | June | 0 | 60 | --- | --- | None | Brief | Occasional |
| | | July | 0 | 60 | --- | --- | None | Brief | Occasional |
| | | August | 0 | 60 | --- | --- | None | Brief | Occasional |
| | | September | 0 | 60 | --- | --- | None | Brief | Occasional |
| | | October | 0 | 60 | --- | --- | None | Brief | Occasional |
| D31-Boreal taiga loamy high flood plains, frozen----- | D | January | 10 | 152 | --- | --- | None | --- | --- |
| | | February | 10 | 152 | --- | --- | None | --- | --- |
| | | March | 10 | 152 | --- | --- | None | --- | --- |
| | | April | 60 | 152 | --- | --- | None | Brief | Rare |
| | | May | 0 | 152 | --- | --- | None | Brief | Rare |
| | | June | 0 | 152 | --- | --- | None | Brief | Rare |
| | | July | 0 | 152 | --- | --- | None | Brief | Rare |
| | | August | 130 | 152 | --- | --- | None | Brief | Rare |
| | | September | 130 | 152 | --- | --- | None | Brief | Rare |
| | | October | 100 | 152 | --- | --- | None | Brief | Rare |
| | | November | 0 | 10 | --- | --- | None | --- | --- |
| | | | 75 | 152 | --- | --- | | | |
| | | December | 0 | 50 | --- | --- | None | --- | --- |
| | | | 65 | 152 | --- | --- | | | |
| D31-Boreal scrub sandy Low flood plains----- | C | May | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | June | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | July | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | August | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | September | 0 | 152 | --- | --- | None | Brief | Frequent |
| | | October | 0 | 152 | --- | --- | None | Brief | Frequent |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|--|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31-Boreal taiga loamy high flood plains, frozen----- | D | January | 10 | 152 | --- | --- | None | --- | --- |
| | | February | 10 | 152 | --- | --- | None | --- | --- |
| | | March | 10 | 152 | --- | --- | None | --- | --- |
| | | April | 60 | 152 | --- | --- | None | Brief | Rare |
| | | May | 0 | 152 | --- | --- | None | Brief | Rare |
| | | June | 0 | 152 | --- | --- | None | Brief | Rare |
| | | July | 0 | 152 | --- | --- | None | Brief | Rare |
| | | August | 130 | 152 | --- | --- | None | Brief | Rare |
| | | September | 130 | 152 | --- | --- | None | Brief | Rare |
| | | October | 100 | 152 | --- | --- | None | Brief | Rare |
| | | November | 0 | 10 | --- | --- | None | --- | --- |
| | | | 75 | 152 | --- | --- | --- | --- | --- |
| | | December | 0 | 50 | --- | --- | None | --- | --- |
| | | | 65 | 152 | --- | --- | --- | --- | --- |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-15 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D31YV8: D31-Boreal water, flowing----- | D | --- | --- | --- | --- | --- | --- | --- | --- |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|---|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | D | January | 10 | 152 | --- | --- | None | --- | --- |
| | | February | 10 | 152 | --- | --- | None | --- | --- |
| | | March | 10 | 152 | --- | --- | None | --- | --- |
| | | April | 60 | 152 | --- | --- | None | Brief | Rare |
| | | May | 0 | 152 | --- | --- | None | Brief | Rare |
| | | June | 0 | 152 | --- | --- | None | Brief | Rare |
| | | July | 0 | 152 | --- | --- | None | Brief | Rare |
| | | August | 130 | 152 | --- | --- | None | Brief | Rare |
| | | September | 130 | 152 | --- | --- | None | Brief | Rare |
| | | October | 100 | 152 | --- | --- | None | Brief | Rare |
| | | November | 0 | 10 | --- | --- | None | --- | --- |
| | | | 75 | 152 | | | | | |
| | | December | 0 | 50 | --- | --- | None | --- | --- |
| | | | 65 | 152 | | | | | |
| D32TL1: D32-Boreal taiga organic plains, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-12 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-12 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-12 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-12 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | D | January | 5 | 152 | --- | --- | None | --- | None |
| | | February | 5 | 152 | --- | --- | None | --- | None |
| | | March | 5 | 152 | --- | --- | None | --- | None |
| | | April | 5 | 152 | --- | --- | None | --- | None |
| | | May | 5 | 152 | --- | --- | None | --- | None |
| | | June | 5 | 152 | --- | --- | None | --- | None |
| | | July | 10 | 152 | --- | --- | None | --- | None |
| | | August | 20 | 152 | --- | --- | None | --- | None |
| | | September | 20 | 152 | --- | --- | None | --- | None |
| | | October | 20 | 152 | --- | --- | None | --- | None |
| | | November | 5 | 152 | --- | --- | None | --- | None |
| | | December | 5 | 152 | --- | --- | None | --- | None |
| D32-Boreal taiga loamy escarpment slopes----- | B | January | 0 | 30 | --- | --- | None | --- | None |
| | | February | 0 | 30 | --- | --- | None | --- | None |
| | | March | 0 | 30 | --- | --- | None | --- | None |
| | | April | 0 | 30 | --- | --- | None | --- | None |
| | | May | 0 | 30 | --- | --- | None | --- | None |
| | | November | 0 | 30 | --- | --- | None | --- | None |
| | | December | 0 | 30 | --- | --- | None | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 13.--Water Features--Continued

| Map symbol and soil name | Hydro- logic group | Month | Water table | | | Ponding | | Flooding | |
|---|--------------------------|-----------|----------------|----------------|---------------------------|-----------|-----------|----------|-----------|
| | | | Upper limit | Lower limit | Surface water depth | Duration | Frequency | Duration | Frequency |
| | | | cm | cm | cm | | | | |
| D32TL2: D32-Boreal taiga silty eolian slopes, frozen----- | C | January | 5 | 152 | --- | --- | None | --- | None |
| | | February | 5 | 152 | --- | --- | None | --- | None |
| | | March | 5 | 152 | --- | --- | None | --- | None |
| | | April | 5 | 152 | --- | --- | None | --- | None |
| | | May | 5 | 152 | --- | --- | None | --- | None |
| | | June | 5 | 152 | --- | --- | None | --- | None |
| | | July | 10 | 152 | --- | --- | None | --- | None |
| | | August | 20 | 152 | --- | --- | None | --- | None |
| | | September | 20 | 152 | --- | --- | None | --- | None |
| | | October | 20 | 152 | --- | --- | None | --- | None |
| | | November | 5 | 152 | --- | --- | None | --- | None |
| | | December | 5 | 152 | --- | --- | None | --- | None |
| D32TL4: D32-Boreal taiga organic plains, frozen----- | D | January | 5 | 152 | --- | --- | --- | --- | None |
| | | February | 5 | 152 | --- | --- | --- | --- | None |
| | | March | 5 | 152 | --- | --- | --- | --- | None |
| | | April | 5 | 152 | --- | --- | --- | --- | None |
| | | May | 5 | 152 | --- | --- | --- | --- | None |
| | | June | 0 | 152 | 0-12 | Very long | Frequent | --- | None |
| | | July | 0 | 152 | 0-12 | Very long | Frequent | --- | None |
| | | August | 0 | 152 | 0-12 | Very long | Frequent | --- | None |
| | | September | 0 | 152 | 0-12 | Very long | Frequent | --- | None |
| | | October | 10 | 152 | --- | --- | --- | --- | None |
| | | November | 5 | 152 | --- | --- | --- | --- | None |
| | | December | 5 | 152 | --- | --- | --- | --- | None |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management--Planting and Soil Rutting Hazard

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|--|---------------------------|--|--------------|--|----------------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH1: D31-Boreal forest rocky colluvial slopes | 34 | Moderately suited Slope Rock fragments | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 | Severe Low strength | 1.00 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 24 | Moderately suited Slope | 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 | Severe Low strength | 1.00 |
| D31-Boreal taiga silty eolian slopes, frozen-- | 17 | Moderately suited Wetness | 0.50 | Moderately suited Wetness | 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 39 | Moderately suited Slope | 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 | Severe Low strength | 1.00 |
| D31-Boreal forest rocky colluvial escarpments-- | 31 | Moderately suited Slope Rock fragments | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 1.00 | Slight Strength | 0.10 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen-- | 59 | Moderately suited Wetness | 0.50 | Moderately suited Wetness | 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 33 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer Slope | 0.75 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | 36 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal forest loamy high flood plains----- | 28 | Well suited | | Moderately suited Rock fragments | 0.50 | Severe Low strength | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management--Planting and Soil Rutting Hazard--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|---|---------------------------|--|----------------------|---|------------------------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH5: D31-Boreal scrub rocky drainages----- | 19 | Moderately suited Rock fragments | 0.50 | Poorly suited Rock fragments Slope | 0.75 0.50 | Severe Low strength | 1.00 |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 56 | Moderately suited Slope Rock fragments | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 1.00 | Severe Low strength | 1.00 |
| D31-Boreal rubble land-- | 25 | Moderately suited Sandiness Rock fragments | 0.50 0.50 | Unsuited Rock fragments Slope Sandiness | 1.00 0.50 0.50 | Slight Strength | 0.10 |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes | 26 | Moderately suited Sandiness Rock fragments | 0.50 0.50 | Unsuited Rock fragments Slope Sandiness | 1.00 1.00 0.50 | Moderate Low strength | 0.50 |
| D31-Boreal forest rocky colluvial slopes----- | 24 | Moderately suited Slope Rock fragments | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 | Severe Low strength | 1.00 |
| D31-Boreal forest gravelly slopes, frozen----- | 20 | Moderately suited Rock fragments | 0.50 | Poorly suited Slope Rock fragments | 0.75 0.75 | Severe Low strength | 1.00 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 32 | Moderately suited Rock fragments | 0.50 | Poorly suited Slope Rock fragments | 0.75 0.75 | Severe Low strength | 1.00 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 29 | Unsuited Restrictive layer Wetness Rock fragments | 1.00 0.50 0.50 | Unsuited Slope Wetness Rock fragments Restrictive layer | 1.00 0.75 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management--Planting and Soil Rutting Hazard--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|--|---------------------------|--|--------------|--|----------------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31CF1: D31-Subalpine woodland silty colluvial slopes, frozen----- | 20 | Moderately suited Rock fragments Wetness | 0.50 0.50 | Unsuited Slope Rock fragments Wetness | 1.00 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen----- | 37 | Moderately suited Wetness | 0.50 | Moderately suited Slope Wetness | 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 27 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer Slope | 0.75 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen----- | 47 | Moderately suited Wetness | 0.50 | Moderately suited Slope Wetness | 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 43 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer Slope | 0.75 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen-- | 79 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer Slope | 0.75 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen-- | 31 | Moderately suited Wetness | 0.50 | Moderately suited Wetness | 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 26 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer Slope | 0.75 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management--Planting and Soil Rutting Hazard--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|---|---------------------------|--|----------------------|--|----------------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31LB1: D31-Boreal forest rocky colluvial slopes----- | 23 | Moderately suited Slope Rock fragments | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 | Severe Low strength | 1.00 |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen----- | 36 | Moderately suited Wetness | 0.50 | Moderately suited Slope Wetness | 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 34 | Moderately suited Slope | 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 | Severe Low strength | 1.00 |
| D31-Boreal forest rocky colluvial slopes----- | 27 | Moderately suited Slope Rock fragments | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 | Severe Low strength | 1.00 |
| D31MT1: D31-Alpine rubble land-- | 66 | Unsuited Rock fragments Slope Sandiness | 1.00 0.50 0.50 | Unsuited Rock fragments Slope Sandiness | 1.00 1.00 0.50 | Slight | |
| D31-Alpine low scrub gravelly colluvial slopes----- | 22 | Moderately suited Slope Rock fragments | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.75 | Severe Low strength | 1.00 |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | 32 | Moderately suited Slope Rock fragments | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.75 | Severe Low strength | 1.00 |
| D31-Alpine scrub gravelly circles----- | 30 | Moderately suited Rock fragments Slope | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.75 | Slight Strength | 0.10 |
| D31-Alpine rubble land-- | 24 | Unsuited Rock fragments Slope Sandiness | 1.00 0.50 0.50 | Unsuited Rock fragments Slope Sandiness | 1.00 1.00 0.50 | Slight | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management--Planting and Soil Rutting Hazard--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|---|---------------------------|--|----------------------|--|------------------------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | 25 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Slope Restrictive layer | 0.75 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Alpine scrub loamy hummocks, frozen----- | 25 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Slope Restrictive layer Rock fragments | 0.75 0.50 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Alpine low scrub loamy solifluction lobes----- | 22 | Moderately suited Rock fragments Slope | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.75 | Severe Low strength | 1.00 |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 27 | Moderately suited Rock fragments | 0.50 | Poorly suited Slope Rock fragments | 0.75 0.75 | Severe Low strength | 1.00 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 24 | Unsuited Restrictive layer Wetness Rock fragments | 1.00 0.50 0.50 | Unsuited Slope Wetness Rock fragments Restrictive layer | 1.00 0.75 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 21 | Moderately suited Slope | 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 | Severe Low strength | 1.00 |
| D31OM1: D31-Alpine scrub silty circles----- | 57 | Moderately suited Rock fragments Slope | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.75 | Severe Low strength | 1.00 |
| D31-Alpine rubble land-- | 30 | Unsuited Rock fragments Slope Sandiness | 1.00 0.50 0.50 | Unsuited Rock fragments Slope Sandiness | 1.00 1.00 0.50 | Slight | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management-Planting and Soil Rutting Hazard--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|--|---------------------------|---|----------------------|---|----------------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31OM2: D31-Alpine scrub silty circles----- | 60 | Moderately suited Rock fragments Slope | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.75 | Severe Low strength | 1.00 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 18 | Moderately suited Slope Rock fragments Wetness | 0.50 0.50 0.50 | Unsuited Slope Rock fragments Wetness | 1.00 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 48 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Slope Restrictive layer | 0.75 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Alpine tussock-scrub silty polygons, frozen | 29 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen----- | 62 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga silty terraces, frozen | 20 | Well suited | | Poorly suited Slope | 0.75 | Severe Low strength | 1.00 |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen----- | 78 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31TF1: D31-Subalpine woodland silty colluvial slopes | 55 | Moderately suited Wetness | 0.50 | Moderately suited Slope Rock fragments Wetness | 0.50 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Subalpine scrub loamy residual slopes-- | 34 | Moderately suited Rock fragments | 0.50 | Poorly suited Rock fragments | 0.75 | Severe Low strength | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management-Planting and Soil Rutting Hazard--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|---|---------------------------|--|----------------------|---|------------------------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 45 | Moderately suited Wetness | 0.50 | Poorly suited Wetness Slope Rock fragments | 0.75 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Subalpine scrub silty till slopes----- | 41 | Moderately suited Rock fragments | 0.50 | Poorly suited Rock fragments Slope | 0.75 0.50 | Severe Low strength | 1.00 |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen----- | 28 | Moderately suited Wetness | 0.50 | Moderately suited Slope Wetness | 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 22 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer Slope | 0.75 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga gravelly colluvial slopes----- | 19 | Moderately suited Rock fragments | 0.50 | Unsuited Slope Rock fragments | 1.00 0.75 | Slight Strength | 0.10 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 17 | Unsuited Restrictive layer Wetness Rock fragments | 1.00 0.50 0.50 | Unsuited Slope Wetness Rock fragments Restrictive layer | 1.00 0.75 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen-- | 44 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer Slope | 0.75 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga silty eolian slopes, frozen-- | 39 | Moderately suited Wetness | 0.50 | Moderately suited Wetness | 0.50 | Severe Low strength Wetness | 1.00 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management--Planting and Soil Rutting Hazard--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|--|---------------------------|--|--------------|--|----------------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC1: D31-Boreal tussock organic plains, frozen | 42 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 24 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Slope Restrictive layer | 0.75 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal forest loamy high flood plains----- | 21 | Well suited | | Moderately suited Rock fragments | 0.50 | Severe Low strength | 1.00 |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen----- | 40 | Moderately suited Rock fragments Wetness | 0.50 0.50 | Unsuited Slope Rock fragments Wetness | 1.00 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 31 | Moderately suited Rock fragments | 0.50 | Poorly suited Slope Rock fragments | 0.75 0.75 | Severe Low strength | 1.00 |
| D31UC3: D31-Boreal tussock organic plains, frozen | 65 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga silty colluvial slopes, frozen----- | 18 | Moderately suited Wetness | 0.50 | Moderately suited Slope Wetness | 0.50 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31UC4: D31-Boreal woodland rocky low flood plains | 32 | Moderately suited Rock fragments | 0.50 | Poorly suited Rock fragments | 0.75 | Slight Strength | 0.10 |
| D31-Boreal forest loamy high flood plains | 25 | Well suited | | Moderately suited Rock fragments | 0.50 | Severe Low strength | 1.00 |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 35 | Moderately suited Rock fragments | 0.50 | Poorly suited Rock fragments Slope | 0.75 0.50 | Severe Low strength | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management--Planting and Soil Rutting Hazard--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|--|---------------------------|--|--------------|---|--------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC5: D31-Alpine scrub gravelly circles, acid | 30 | Poorly suited Rock fragments | 0.75 | Unsuited Rock fragments Slope | 1.00 0.50 | Severe Low strength | 1.00 |
| D31WA1: D31-Alpine water, ponded | 95 | Not rated | | Not rated | | Not rated | |
| D31YV1: D31-Boreal forest loamy mid flood plains | 36 | Well suited | | Well suited | | Moderate Low strength | 0.50 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Well suited | | Moderately suited Slope | 0.50 | Severe Low strength | 1.00 |
| D31-Boreal scrub sandy low flood plains | 26 | Well suited | | Well suited | | Moderate Low strength | 0.50 |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen----- | 55 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Well suited | | Well suited | | Severe Low strength | 1.00 |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen----- | 90 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D31YV8: D31-Boreal water, flowing----- | 70 | Not rated | | Not rated | | Not rated | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | 78 | Well suited | | Well suited | | Severe Low strength | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 14.--Land Management--Planting and Soil Rutting Hazard--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for hand planting | | Suitability for mechanical planting | | Soil rutting hazard | |
|--|---------------------------|--|--------------|--|----------------------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D32TL1: D32-Boreal taiga organic plains, frozen | 79 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 40 | Moderately suited Wetness Slope | 0.50 0.50 | Unsuited Slope Wetness Rock fragments | 1.00 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D32-Boreal taiga loamy escarpment slopes | 30 | Moderately suited Slope Rock fragments | 0.50 0.50 | Unsuited Slope Rock fragments | 1.00 0.75 | Severe Low strength | 1.00 |
| D32-Boreal taiga silty eolian slopes, frozen-- | 20 | Moderately suited Wetness | 0.50 | Poorly suited Wetness Slope | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |
| D32TL4: D32-Boreal taiga organic plains, frozen | 83 | Unsuited Restrictive layer Wetness | 1.00 0.50 | Poorly suited Wetness Restrictive layer | 0.75 0.50 | Severe Low strength Wetness | 1.00 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management--Hazard of Erosion and Suitability for Roads

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|--|---------------------------|---------------------------------------|-------|--|-------|--|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH1: D31-Boreal forest rocky colluvial slopes | 34 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 24 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31-Boreal taiga silty eolian slopes, frozen-- | 17 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Wetness | 1.00 1.00 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 39 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31-Boreal forest rocky colluvial escarpments----- | 31 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen-- | 59 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Wetness | 1.00 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 33 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | 36 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31-Boreal forest loamy high flood plains----- | 28 | Slight | | Slight | | Poorly suited Low strength | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management--Hazard of Erosion and Suitability for Roads--Continued

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|---|---------------------------|---------------------------------------|-------|--|-------|--|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH5: D31-Boreal scrub rocky drainages----- | 19 | Slight | | Moderate Slope/erodibility | 0.50 | Moderately suited Slope Rock fragments Low strength | 0.50 0.50 0.50 |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 56 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Low strength Rock fragments | 1.00 1.00 0.50 |
| D31-Boreal rubble land-- | 25 | Moderate Slope/erodibility | 0.50 | Moderate Slope/erodibility | 0.50 | Poorly suited Slope Sandiness | 1.00 0.50 |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes----- | 26 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31-Boreal forest rocky colluvial slopes | 24 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 20 | Moderate Slope/erodibility | 0.50 | Moderate Slope/erodibility | 0.50 | Poorly suited Slope Low strength Wetness | 1.00 1.00 1.00 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 32 | Moderate Slope/erodibility | 0.50 | Moderate Slope/erodibility | 0.50 | Poorly suited Slope Low strength Wetness | 1.00 1.00 1.00 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 29 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope Wetness | 1.00 1.00 1.00 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 20 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Low strength Wetness | 1.00 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management--Hazard of Erosion and Suitability for Roads--Continued

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|---|---------------------------|---------------------------------------|-------|--|-------|---|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen----- | 37 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Wetness Slope | 1.00 1.00 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 27 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen----- | 47 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Wetness Slope | 1.00 1.00 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 43 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen----- | 79 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen | 31 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Wetness | 1.00 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 26 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31-Boreal forest rocky colluvial slopes----- | 23 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen----- | 36 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Wetness Slope | 1.00 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management--Hazard of Erosion and Suitability for Roads--Continued

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|--|---------------------------|---------------------------------------|-------|--|-------|---|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31LB2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 34 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31-Boreal forest rocky colluvial slopes----- | 27 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31MT1: D31-Alpine rubble land-- | 66 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Rock fragments Sandiness Stickiness; high plasticity index | 1.00 1.00 0.50 0.50 |
| D31-Alpine low scrub gravelly colluvial slopes----- | 22 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Low strength Rock fragments | 1.00 0.50 0.50 |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | 32 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Low strength Rock fragments | 1.00 0.50 0.50 |
| D31-Alpine scrub gravelly circles----- | 30 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31-Alpine rubble land-- | 24 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Rock fragments Sandiness Stickiness; high plasticity index | 1.00 1.00 0.50 0.50 |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | 25 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope | 1.00 1.00 |
| D31-Alpine scrub loamy hummocks, frozen----- | 25 | Slight | | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope | 1.00 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management--Hazard of Erosion and Suitability for Roads--Continued

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|---|---------------------------|---------------------------------------|-------|--|-------|---|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31MT3: D31-Alpine low scrub loamy solifluction lobes----- | 22 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Low strength Rock fragments | 1.00 0.50 0.50 |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 27 | Moderate Slope/erodibility | 0.50 | Moderate Slope/erodibility | 0.50 | Poorly suited Slope Low strength Wetness | 1.00 1.00 1.00 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 24 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope Wetness | 1.00 1.00 1.00 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 21 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope | 1.00 |
| D31OM1: D31-Alpine scrub silty circles----- | 57 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Rock fragments Low strength | 1.00 0.50 0.50 |
| D31-Alpine rubble land-- | 30 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Rock fragments Sandiness Stickiness; high plasticity index | 1.00 1.00 0.50 0.50 |
| D31OM2: D31-Alpine scrub silty circles----- | 60 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Rock fragments Low strength | 1.00 0.50 0.50 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 18 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Low strength Wetness | 1.00 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management--Hazard of Erosion and Suitability for Roads--Continued

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|---|---------------------------|---------------------------------------|-------|--|-------|---|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 48 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope | 1.00 1.00 |
| D31-Alpine tussock-scrub silty polygons, frozen----- | 29 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Wetness | 1.00 1.00 |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen----- | 62 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31-Boreal taiga silty terraces, frozen----- | 20 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope Wetness | 1.00 1.00 1.00 |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen----- | 78 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31TF1: D31-Subalpine woodland silty colluvial slopes----- | 55 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope Wetness | 1.00 1.00 1.00 |
| D31-Subalpine scrub loamy residual slopes-- | 34 | Slight | | Slight | | Poorly suited Low strength | 1.00 |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 45 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope Wetness | 1.00 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management-Hazard of Erosion and Suitability for Roads--Continued

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|---|---------------------------|---------------------------------------|-------|--|-------|--|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TF2: D31-Subalpine scrub silty till slopes----- | 41 | Moderate Slope/erodibility | 0.50 | Moderate Slope/erodibility | 0.50 | Poorly suited Rock fragments Slope Low strength | 1.00 1.00 0.50 |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen----- | 28 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Wetness Slope | 1.00 1.00 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 22 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31-Boreal taiga gravelly colluvial slopes----- | 19 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Rock fragments | 1.00 0.50 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 17 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope Wetness | 1.00 1.00 1.00 |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | 44 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 39 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Wetness | 1.00 1.00 |
| D31UC1: D31-Boreal tussock organic plains, frozen | 42 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management--Hazard of Erosion and Suitability for Roads--Continued

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|--|---------------------------|---------------------------------------|-------|--|-------|--|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC1: D31-Boreal taiga organic eolian slopes, frozen----- | 24 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Ponding Slope | 1.00 1.00 1.00 |
| D31-Boreal forest loamy high flood plains | 21 | Slight | | Slight | | Poorly suited Low strength | 1.00 |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen----- | 40 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Low strength Wetness | 1.00 1.00 1.00 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 31 | Moderate Slope/erodibility | 0.50 | Moderate Slope/erodibility | 0.50 | Poorly suited Slope Low strength Wetness | 1.00 1.00 1.00 |
| D31UC3: D31-Boreal tussock organic plains, frozen | 65 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31-Boreal taiga silty colluvial slopes, frozen----- | 18 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Wetness Slope | 1.00 1.00 1.00 |
| D31UC4: D31-Boreal woodland rocky low flood plains | 32 | Slight | | Slight | | Poorly suited Flooding Wetness | 1.00 1.00 |
| D31-Boreal forest loamy high flood plains | 25 | Slight | | Slight | | Poorly suited Low strength | 1.00 |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 35 | Moderate Slope/erodibility | 0.50 | Moderate Slope/erodibility | 0.50 | Poorly suited Rock fragments Slope Low strength | 1.00 1.00 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management--Hazard of Erosion and Suitability for Roads--Continued

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|--|---------------------------|---------------------------------------|-------|--|-------|--|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC5: D31-Alpine scrub gravelly circles, acid | 30 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Rock fragments Slope Low strength | 1.00 0.50 0.50 |
| D31WA1: D31-Alpine water, ponded----- | 95 | Not rated | | Not rated | | Not rated | |
| D31YV1: D31-Boreal forest loamy mid flood plains | 36 | Slight | | Slight | | Poorly suited Flooding | 1.00 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Wetness Low strength | 1.00 0.50 |
| D31-Boreal scrub sandy low flood plains | 26 | Slight | | Slight | | Poorly suited Flooding Wetness | 1.00 1.00 |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen----- | 55 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Slight | | Slight | | Poorly suited Wetness Low strength | 1.00 0.50 |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen----- | 90 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D31YV8: D31-Boreal water, flowing----- | 70 | Not rated | | Not rated | | Not rated | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | 78 | Slight | | Slight | | Poorly suited Wetness Low strength | 1.00 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 15.--Land Management-Hazard of Erosion and Suitability for Roads--Continued

| Map symbol and soil name | Pct. of map unit | Hazard of erosion | | Hazard of erosion on roads and trails | | Suitability for roads (natural surface) | |
|---|---------------------------|---------------------------------------|-------|--|-------|---|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D32TL1: D32-Boreal taiga organic plains, frozen | 79 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen---- | 40 | Severe Slope/erodibility | 0.75 | Severe Slope/erodibility | 0.95 | Poorly suited Low strength Slope Wetness | 1.00 1.00 1.00 |
| D32-Boreal taiga loamy escarpment slopes----- | 30 | Very severe Slope/erodibility | 0.95 | Severe Slope/erodibility | 0.95 | Poorly suited Slope Wetness Low strength | 1.00 1.00 0.50 |
| D32-Boreal taiga silty eolian slopes, frozen-- | 20 | Moderate Slope/erodibility | 0.50 | Severe Slope/erodibility | 0.95 | Poorly suited Wetness Slope Low strength | 1.00 0.50 0.50 |
| D32TL4: D32-Boreal taiga organic plains, frozen | 83 | Slight | | Moderate Slope/erodibility | 0.50 | Poorly suited Low strength Ponding | 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 16.--Land Management--Site Preparation

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (deep) | | Suitability for mechanical site preparation (surface) | |
|--|---------------------------|--|-------|---|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH1: D31-Boreal forest rocky colluvial slopes | 34 | Unsuited Slope | 1.00 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 24 | Unsuited Slope | 1.00 | Unsuited Slope | 1.00 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 17 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 39 | Unsuited Slope | 1.00 | Unsuited Slope | 1.00 |
| D31-Boreal forest rocky colluvial escarpments----- | 31 | Unsuited Slope | 1.00 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen-- | 59 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 33 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | 36 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31-Boreal forest loamy high flood plains----- | 28 | Well suited | | Well suited | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 16.--Land Management--Site Preparation--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (deep) | | Suitability for mechanical site preparation (surface) | |
|---|---------------------------|--|--------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH5: D31-Boreal scrub rocky drainages----- | 19 | Poorly suited Rock fragments | 0.50 | Poorly suited Rock fragments | 0.50 |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 56 | Unsuited Slope Rock fragments | 1.00 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31-Boreal rubble land-- | 25 | Poorly suited Restrictive layer Slope | 0.50 0.50 | Poorly suited Slope Rock fragments | 0.50 0.50 |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes | 26 | Poorly suited Slope Rock fragments | 0.50 0.50 | Poorly suited Slope Rock fragments | 0.50 0.50 |
| D31-Boreal forest rocky colluvial slopes | 24 | Unsuited Slope | 1.00 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 20 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Rock fragments | 0.50 0.50 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 32 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Rock fragments | 0.50 0.50 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 29 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Wetness Restrictive layer Rock fragments | 0.50 0.50 0.50 0.50 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 20 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Wetness | 0.50 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 16.--Land Management--Site Preparation--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (deep) | | Suitability for mechanical site preparation (surface) | |
|---|---------------------------|--|-------|---|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen----- | 37 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 27 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen----- | 47 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 43 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen-- | 79 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen-- | 31 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 26 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31-Boreal forest rocky colluvial slopes | 23 | Unsuited Slope | 1.00 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen----- | 36 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 34 | Unsuited Slope | 1.00 | Unsuited Slope | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 16.--Land Management--Site Preparation--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (deep) | | Suitability for mechanical site preparation (surface) | |
|---|---------------------------|--|--------------|---|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31LB2: D31-Boreal forest rocky colluvial slopes | 27 | Unsuited Slope | 1.00 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31MT1: D31-Alpine rubble land-- | 66 | Unsuited Rock fragments Slope | 1.00 1.00 | Unsuited Slope Rock fragments | 1.00 1.00 |
| D31-Alpine low scrub gravelly colluvial slopes----- | 22 | Unsuited Slope Rock fragments | 1.00 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | 32 | Unsuited Slope Rock fragments | 1.00 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31-Alpine scrub gravelly circles----- | 30 | Unsuited Slope | 1.00 | Unsuited Slope | 1.00 |
| D31-Alpine rubble land-- | 24 | Unsuited Rock fragments Slope | 1.00 1.00 | Unsuited Slope Rock fragments | 1.00 1.00 |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | 25 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Wetness Slope Restrictive layer | 0.50 0.50 0.50 |
| D31-Alpine scrub loamy hummocks, frozen | 25 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31-Alpine low scrub loamy solifluction lobes----- | 22 | Unsuited Slope Rock fragments | 1.00 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 27 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Rock fragments | 0.50 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 16.--Land Management--Site Preparation--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (deep) | | Suitability for mechanical site preparation (surface) | |
|---|---------------------------|--|--------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31OF1: D31-Boreal woodland silty eolian slopes, frozen----- | 24 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Wetness Restrictive layer Rock fragments | 0.50 0.50 0.50 0.50 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 21 | Unsuited Slope | 1.00 | Unsuited Slope | 1.00 |
| D31OM1: D31-Alpine scrub silty circles----- | 57 | Unsuited Slope Rock fragments | 1.00 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31-Alpine rubble land-- | 30 | Unsuited Rock fragments Slope | 1.00 1.00 | Unsuited Slope Rock fragments | 1.00 1.00 |
| D31OM2: D31-Alpine scrub silty circles----- | 60 | Unsuited Slope Rock fragments | 1.00 0.50 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 18 | Unsuited Wetness Slope | 1.00 1.00 | Unsuited Slope Wetness | 1.00 0.50 |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 48 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31-Alpine tussock-scrub silty polygons, frozen | 29 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen----- | 62 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 16.--Land Management--Site Preparation--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (deep) | | Suitability for mechanical site preparation (surface) | |
|---|---------------------------|--|--------------|---|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TE1: D31-Boreal taiga silty terraces, frozen | 20 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope | 0.50 |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen----- | 78 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31TF1: D31-Subalpine woodland silty colluvial slopes | 55 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Wetness | 0.50 0.50 |
| D31-Subalpine scrub loamy residual slopes | 34 | Well suited | | Poorly suited Rock fragments | 0.50 |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 45 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Wetness Slope | 0.50 0.50 |
| D31-Subalpine scrub silty till slopes----- | 41 | Poorly suited Rock fragments Slope | 0.50 0.50 | Unsuited Rock fragments Slope | 1.00 0.50 |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen----- | 28 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 22 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31-Boreal taiga gravelly colluvial slopes----- | 19 | Poorly suited Slope Rock fragments | 0.50 0.50 | Poorly suited Slope Rock fragments | 0.50 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 16.--Land Management--Site Preparation--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (deep) | | Suitability for mechanical site preparation (surface) | |
|---|---------------------------|--|--------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TH1: D31-Boreal woodland silty eolian slopes, frozen----- | 17 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Wetness Restrictive layer Rock fragments | 0.50 0.50 0.50 0.50 |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | 44 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 39 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D31UC1: D31-Boreal tussock organic plains, frozen | 42 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 24 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Wetness Restrictive layer | 0.50 0.50 0.50 |
| D31-Boreal forest loamy high flood plains | 21 | Well suited | | Well suited | |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen----- | 40 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Wetness | 0.50 0.50 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 31 | Unsuited Wetness Slope | 1.00 0.50 | Poorly suited Slope Rock fragments | 0.50 0.50 |
| D31UC3: D31-Boreal tussock organic plains, frozen | 65 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 16.--Land Management--Site Preparation--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (deep) | | Suitability for mechanical site preparation (surface) | |
|---|---------------------------|--|--------------|---|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC3: D31-Boreal taiga silty colluvial slopes, frozen----- | 18 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D31UC4: D31-Boreal woodland rocky low flood plains | 32 | Well suited | | Poorly suited Rock fragments | 0.50 |
| D31-Boreal forest loamy high flood plains | 25 | Well suited | | Well suited | |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 35 | Poorly suited Rock fragments Slope | 0.50 0.50 | Unsuited Rock fragments Slope | 1.00 0.50 |
| D31-Alpine scrub gravelly circles, acid | 30 | Unsuited Rock fragments | 1.00 | Unsuited Rock fragments | 1.00 |
| D31WA1: D31-Alpine water, ponded | 95 | Not rated | | Not rated | |
| D31YV1: D31-Boreal forest loamy mid flood plains----- | 36 | Well suited | | Well suited | |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Unsuited Wetness | 1.00 | Well suited | |
| D31-Boreal scrub sandy low flood plains | 26 | Well suited | | Well suited | |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen----- | 55 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Unsuited Wetness | 1.00 | Well suited | |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen----- | 90 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 16.--Land Management--Site Preparation--Continued

| Map symbol and soil name | Pct. of map unit | Suitability for mechanical site preparation (deep) | | Suitability for mechanical site preparation (surface) | |
|--|---------------------------|--|--------------|---|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31YV8: D31-Boreal water, flowing----- | 70 | Not rated | | Not rated | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | 78 | Unsuited Wetness | 1.00 | Well suited | |
| D32TL1: D32-Boreal taiga organic plains, frozen | 79 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 40 | Unsuited Wetness Slope | 1.00 1.00 | Unsuited Slope Wetness | 1.00 0.50 |
| D32-Boreal taiga loamy escarpment slopes | 30 | Unsuited Slope | 1.00 | Unsuited Slope Rock fragments | 1.00 0.50 |
| D32-Boreal taiga silty eolian slopes, frozen----- | 20 | Unsuited Wetness | 1.00 | Poorly suited Wetness | 0.50 |
| D32TL4: D32-Boreal taiga organic plains, frozen | 83 | Unsuited Wetness | 1.00 | Poorly suited Wetness Restrictive layer | 0.50 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 17.--Land Management--Site Restoration

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

| Map unit symbol and soil name | Pct. of map unit | Potential for damage to soil by fire | | Potential for seedling mortality | |
|--|---------------------------|--|-------|---------------------------------------|-------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH1: D31-Boreal forest rocky colluvial slopes----- | 34 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Moderate Available water | 0.50 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 24 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Moderate Available water | 0.50 |
| D31-Boreal taiga silty eolian slopes, frozen-- | 17 | Low | | High Wetness | 1.00 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 39 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Moderate Available water | 0.50 |
| D31-Boreal forest rocky colluvial escarpments-- | 31 | High Texture/slope/surface layer thickness/rock fragments | 1.00 | High Available water | 1.00 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen-- | 59 | Low | | High Wetness | 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 33 | Low | | High Wetness | 1.00 |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | 36 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal forest loamy high flood plains | 28 | Low | | Low | |
| D31-Boreal scrub rocky drainages----- | 19 | Low | | Low | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 17.--Land Management--Site Restoration--Continued

| Map unit symbol and soil name | Pct. of map unit | Potential for damage to soil by fire | | Potential for seedling mortality | |
|---|---------------------------|--|-------|--|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 56 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Low | |
| D31-Boreal rubble land-- | 25 | High Texture/rock fragments | 1.00 | Low | |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes | 26 | Moderate Texture/surface layer thickness/rock fragments | 0.50 | High Available water Soil reaction | 1.00 0.50 |
| D31-Boreal forest rocky colluvial slopes | 24 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Moderate Available water | 0.50 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 20 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 32 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 29 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 20 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | High Wetness | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 17.--Land Management--Site Restoration--Continued

| Map unit symbol and soil name | Pct. of map unit | Potential for damage to soil by fire | | Potential for seedling mortality | |
|---|---------------------------|--|-------|---------------------------------------|-------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen----- | 37 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 27 | Low | | High Wetness | 1.00 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen----- | 47 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 43 | Low | | High Wetness | 1.00 |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen-- | 79 | Low | | High Wetness | 1.00 |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen-- | 31 | Low | | High Wetness | 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 26 | Low | | High Wetness | 1.00 |
| D31-Boreal forest rocky colluvial slopes | 23 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Moderate Available water | 0.50 |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen----- | 36 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 17.--Land Management--Site Restoration--Continued

| Map unit symbol and soil name | Pct. of map unit | Potential for damage to soil by fire | | Potential for seedling mortality | |
|--|---------------------------|--|-------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31LB2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 34 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Moderate Available water | 0.50 |
| D31-Boreal forest rocky colluvial slopes----- | 27 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Moderate Available water | 0.50 |
| D31MT1: D31-Alpine rubble land-- | 66 | Low | | Not rated | |
| D31-Alpine low scrub gravelly colluvial slopes----- | 22 | Low Texture/slope/rock fragments | 0.10 | Low | |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | 32 | Low Texture/slope/rock fragments | 0.10 | Low | |
| D31-Alpine scrub gravelly circles----- | 30 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Low | |
| D31-Alpine rubble land-- | 24 | Low | | Not rated | |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | 25 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Alpine scrub loamy hummocks, frozen | 25 | Low Texture/rock fragments | 0.10 | High Wetness Soil reaction | 1.00 0.50 |
| D31-Alpine low scrub loamy solifluction lobes----- | 22 | Low Texture/slope/rock fragments | 0.10 | Low | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 17.--Land Management--Site Restoration--Continued

| Map unit symbol and soil name | Pct. of map unit | Potential for damage to soil by fire | | Potential for seedling mortality | |
|---|---------------------------|--|-------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 27 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 24 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 21 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Moderate Available water | 0.50 |
| D31OM1: D31-Alpine scrub silty circles----- | 57 | Low Texture/slope/rock fragments | 0.10 | Low | |
| D31-Alpine rubble land-- | 30 | Low | | Not rated | |
| D31OM2: D31-Alpine scrub silty circles----- | 60 | Low Texture/slope/rock fragments | 0.10 | Low | |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 18 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | High Wetness | 1.00 |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 48 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Alpine tussock-scrub silty polygons, frozen | 29 | Low | | High Wetness Soil reaction | 1.00 0.50 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 17.--Land Management--Site Restoration--Continued

| Map unit symbol and soil name | Pct. of map unit | Potential for damage to soil by fire | | Potential for seedling mortality | |
|---|---------------------------|--|-------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen----- | 62 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal taiga silty terraces, frozen | 20 | Moderate Texture/surface layer thickness/rock fragments | 0.50 | High Wetness Available water | 1.00 0.50 |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen----- | 78 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31TF1: D31-Subalpine woodland silty colluvial slopes | 55 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness Soil reaction | 1.00 0.50 |
| D31-Subalpine scrub loamy residual slopes-- | 34 | Low | | Moderate Soil reaction | 0.50 |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 45 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Subalpine scrub silty till slopes----- | 41 | Low Texture/rock fragments | 0.10 | Moderate Soil reaction | 0.50 |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen----- | 28 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 22 | Low | | High Wetness | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 17.--Land Management--Site Restoration--Continued

| Map unit symbol and soil name | Pct. of map unit | Potential for damage to soil by fire | | Potential for seedling mortality | |
|---|---------------------------|--|-------|---------------------------------------|-------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TH1: D31-Boreal taiga gravelly colluvial slopes----- | 19 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | Low | |
| D31-Boreal woodland silty eolian slopes, frozen----- | 17 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen-- | 44 | Low | | High Wetness | 1.00 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 39 | Low | | High Wetness | 1.00 |
| D31UC1: D31-Boreal tussock organic plains, frozen | 42 | Low | | High Wetness | 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 24 | Low | | High Wetness | 1.00 |
| D31-Boreal forest loamy high flood plains----- | 21 | Low | | Low | |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen----- | 40 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | High Wetness | 1.00 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 31 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |
| D31UC3: D31-Boreal tussock organic plains, frozen | 65 | Low | | High Wetness | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 17.--Land Management--Site Restoration--Continued

| Map unit symbol and soil name | Pct. of map unit | Potential for damage to soil by fire | | Potential for seedling mortality | |
|---|---------------------------|--|-------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC3: D31-Boreal taiga silty colluvial slopes, frozen----- | 18 | Low Texture/surface layer thickness/rock fragments | 0.10 | High Wetness | 1.00 |
| D31UC4: D31-Boreal woodland rocky low flood plains | 32 | High Texture/rock fragments | 1.00 | High Wetness Available water | 1.00 0.50 |
| D31-Boreal forest loamy high flood plains | 25 | Low | | Low | |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 35 | Low Texture/rock fragments | 0.10 | Moderate Soil reaction | 0.50 |
| D31-Alpine scrub gravelly circles, acid | 30 | Moderate Texture/surface layer thickness/rock fragments | 0.50 | Low | |
| D31WA1: D31-Alpine water, ponded | 95 | Not rated | | Not rated | |
| D31YV1: D31-Boreal forest loamy mid flood plains | 36 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal scrub sandy low flood plains | 26 | Low Texture/rock fragments | 0.10 | High Wetness Salinity | 1.00 0.50 |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen----- | 55 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 17.--Land Management--Site Restoration--Continued

| Map unit symbol and soil name | Pct. of map unit | Potential for damage to soil by fire | | Potential for seedling mortality | |
|---|---------------------------|--|-------|---------------------------------------|--------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen----- | 90 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D31YV8: D31-Boreal water, flowing----- | 70 | Not rated | | Not rated | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | 78 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D32TL1: D32-Boreal taiga organic plains, frozen----- | 79 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 40 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D32-Boreal taiga loamy escarpment slopes----- | 30 | Moderate Texture/slope/surface layer thickness/rock fragments | 0.50 | High Wetness Available water | 1.00 0.50 |
| D32-Boreal taiga silty eolian slopes, frozen----- | 20 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |
| D32TL4: D32-Boreal taiga organic plains, frozen | 83 | Low Texture/rock fragments | 0.10 | High Wetness | 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.00 to 0.99. The smaller the value, the greater the limitation. See text for further explanation of ratings in this table.)

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|--|---------------------------|---|--------------------------|--|--------------------------|---|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH1: D31-Boreal forest rocky colluvial slopes----- | 34 | Fair Too acid Droughty Stone content | 0.50 0.76 0.95 | Poor Slope Cobble content Stones | 0.00 0.85 0.99 | Poor Rock fragments Slope Hard to reclaim (rock fragments) | 0.00 0.00 0.00 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 24 | Fair Too acid Droughty | 0.95 0.98 | Poor Slope Cobble content | 0.00 0.86 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31-Boreal taiga silty eolian slopes, frozen-- | 17 | Fair Droughty Too acid Water erosion | 0.36 0.50 0.90 | Fair No permafrost depth limitation Wetness | 0.01 0.22 | Fair No permafrost depth limitation Wetness No rock fragments | 0.01 0.22 1.00 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 39 | Fair Too acid Droughty | 0.95 0.98 | Poor Slope Cobble content | 0.00 0.86 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31-Boreal forest rocky colluvial escarpments-- | 31 | Poor Stone content Droughty Cobble content | 0.00 0.00 0.24 | Poor Slope Stones Cobble content | 0.00 0.00 0.00 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen-- | 59 | Fair Droughty Too acid Water erosion | 0.36 0.50 0.90 | Fair No permafrost depth limitation Wetness | 0.01 0.22 | Fair No permafrost depth limitation Wetness No rock fragments | 0.01 0.22 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 33 | Fair Droughty Water erosion Too acid | 0.15 0.37 0.84 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|---|---------------------------|--|--------------------------|---|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | 36 | Fair Water erosion Droughty Too acid | 0.06 0.39 0.88 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31-Boreal forest loamy high flood plains----- | 28 | Poor Wind erosion Droughty Too sandy | 0.00 0.66 0.86 | Good | | Poor Rock fragments Hard to reclaim (rock fragments) Too sandy | 0.00 0.20 0.86 |
| D31-Boreal scrub rocky drainages----- | 19 | Poor Wind erosion Droughty Low content of organic matter | 0.00 0.22 0.98 | Good | | Poor Rock fragments Hard to reclaim (rock fragments) | 0.00 0.00 |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 56 | Fair Droughty Cobble content | 0.13 0.79 | Poor Slope Cobble content | 0.00 0.10 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31-Boreal rubble land-- | 25 | Poor Droughty Depth to bedrock Cobble content | 0.00 0.02 0.61 | Poor Depth to bedrock Cobble content | 0.00 0.00 | Poor Rock fragments Slope Depth to bedrock | 0.00 0.00 0.02 |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes | 26 | Poor Wind erosion Droughty Cobble content | 0.00 0.00 0.42 | Poor Cobble content Slope | 0.00 0.00 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31-Boreal forest rocky colluvial slopes----- | 24 | Fair Too acid Droughty Stone content | 0.50 0.76 0.95 | Poor Slope Cobble content Stones | 0.00 0.85 0.99 | Poor Rock fragments Slope Hard to reclaim (rock fragments) | 0.00 0.00 0.00 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 20 | Fair Droughty Too acid Water erosion | 0.07 0.74 0.99 | Poor Wetness Slope No permafrost depth limitation | 0.00 0.00 0.05 | Poor Wetness Rock fragments Slope | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|---|---------------------------|--|--------------------------|---|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen----- | 32 | Fair Droughty Too acid Water erosion | 0.07 0.74 0.99 | Poor Wetness Slope No permafrost depth limitation | 0.00 0.00 0.05 | Poor Wetness Rock fragments Slope | 0.00 0.00 0.00 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 29 | Fair Droughty Too acid | 0.02 0.50 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.00 | Poor Wetness Depth to permafrost Rock fragments | 0.00 0.00 0.00 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 20 | Fair Droughty Too acid | 0.92 0.97 | Poor Depth to permafrost Slope Wetness | 0.00 0.00 0.22 | Poor Slope Depth to permafrost Rock fragments | 0.00 0.00 0.00 |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen----- | 37 | Poor Wind erosion Droughty Too acid | 0.00 0.60 0.61 | Poor Depth to permafrost Wetness | 0.00 0.22 | Poor Depth to permafrost Slope Wetness | 0.00 0.16 0.22 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 27 | Fair Droughty Water erosion | 0.15 0.37 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen----- | 47 | Poor Wind erosion Droughty Too acid | 0.00 0.60 0.61 | Poor Depth to permafrost Wetness | 0.00 0.22 | Poor Depth to permafrost Slope Wetness | 0.00 0.16 0.22 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 43 | Fair Droughty Water erosion Too acid | 0.15 0.37 0.84 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen----- | 79 | Fair Droughty Water erosion Too acid | 0.15 0.37 0.84 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|---|---------------------------|---|--------------------------|--|--------------------------|---|----------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen-- | 31 | Fair Droughty Too acid Water erosion | 0.36 0.50 0.90 | Fair No permafrost depth limitation Wetness | 0.01 0.22 | Fair No permafrost depth limitation Wetness No rock fragments | 0.01 0.22 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen-- | 26 | Fair Droughty Water erosion Too acid | 0.15 0.37 0.84 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31-Boreal forest rocky colluvial slopes----- | 23 | Fair Too acid Droughty Stone content | 0.50 0.76 0.95 | Poor Slope Cobble content Stones | 0.00 0.85 0.99 | Poor Rock fragments Slope Hard to reclaim (rock fragments) | 0.00 0.00 0.00 |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen----- | 36 | Poor Wind erosion Droughty Too acid | 0.00 0.60 0.61 | Poor Depth to permafrost Wetness | 0.00 0.22 | Poor Depth to permafrost Slope Wetness | 0.00 0.16 0.22 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 34 | Fair Too acid Droughty | 0.95 0.98 | Poor Slope Cobble content | 0.00 0.86 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31-Boreal forest rocky colluvial slopes | 27 | Fair Too acid Droughty Stone content | 0.50 0.76 0.95 | Poor Slope Cobble content Stones | 0.00 0.85 0.99 | Poor Rock fragments Slope Hard to reclaim (rock fragments) | 0.00 0.00 0.00 |
| D31MT1: D31-Alpine rubble land-- | 66 | Not rated | | Poor Slope Cobble content Stones | 0.00 0.00 0.00 | Not rated | |
| D31-Alpine low scrub gravelly colluvial slopes----- | 22 | Poor Wind erosion Stone content Too acid | 0.00 0.23 0.50 | Poor Slope Stones Cobble content | 0.00 0.25 0.99 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|--|---------------------------|---|--------------------------|---|--------------------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | 32 | Poor Wind erosion Stone content Too acid | 0.00 0.23 0.50 | Poor Slope Stones Cobble content | 0.00 0.25 0.99 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31-Alpine scrub gravelly circles----- | 30 | Poor Stone content Too acid Droughty | 0.00 0.50 0.80 | Poor Slope Stones | 0.00 0.00 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31-Alpine rubble land-- | 24 | Not rated | | Poor Slope Cobble content Stones | 0.00 0.00 0.00 | Not rated | |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | 25 | Fair Droughty Too acid Water erosion | 0.06 0.84 0.90 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.50 | Not rated | |
| D31-Alpine scrub loamy hummocks, frozen | 25 | Fair Droughty Too acid | 0.24 0.68 | Poor Wetness No permafrost depth limitation | 0.00 0.04 | Not rated | |
| D31-Alpine low scrub loamy solifluction lobes----- | 22 | Fair Stone content Too sandy Too acid | 0.39 0.44 0.74 | Poor Slope Stones | 0.00 0.33 | Poor Slope Rock fragments Hard to reclaim (rock fragments) | 0.00 0.00 0.32 |
| D31OF1: D31-Boreal forest gravelly colluvial colluvial slopes, frozen----- | 27 | Fair Droughty Too acid Water erosion | 0.07 0.74 0.99 | Poor Wetness Slope No permafrost depth limitation | 0.00 0.00 0.05 | Poor Wetness Rock fragments Slope | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|---|---------------------------|---|----------------------|---|----------------------|--|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31OF1: D31-Boreal woodland silty eolian slopes, frozen----- | 24 | Fair Droughty Too acid | 0.02 0.50 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.00 | Poor Wetness Depth to permafrost Rock fragments | 0.00 0.00 0.00 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 21 | Fair Too acid Droughty | 0.95 0.98 | Poor Slope Cobble content | 0.00 0.86 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31OM1: D31-Alpine scrub silty circles----- | 57 | Poor Wind erosion Stone content Droughty | 0.00 0.00 0.92 | Poor Slope Stones | 0.00 0.00 | Poor Rock fragments Slope Hard to reclaim (rock fragments) | 0.00 0.00 0.00 |
| D31-Alpine rubble land-- | 30 | Not rated | | Poor Slope Cobble content Stones | 0.00 0.00 0.00 | Not rated | |
| D31OM2: D31-Alpine scrub silty circles----- | 60 | Poor Wind erosion Stone content Droughty | 0.00 0.00 0.92 | Poor Slope Stones | 0.00 0.00 | Poor Rock fragments Slope Hard to reclaim (rock fragments) | 0.00 0.00 0.00 |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | 18 | Fair Droughty Too acid | 0.92 0.97 | Poor Slope Depth to permafrost Wetness | 0.00 0.00 0.22 | Poor Slope Depth to permafrost Rock fragments | 0.00 0.00 0.00 |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 48 | Fair Droughty Too acid Water erosion | 0.06 0.84 0.90 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31-Alpine tussock-scrub silty polygons, frozen | 29 | Poor Wind erosion Droughty Too acid | 0.00 0.05 0.50 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|---|---------------------------|---|--------------------------|---|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen----- | 62 | Fair Water erosion Droughty Too acid | 0.06 0.39 0.88 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31-Boreal taiga silty terraces, frozen | 20 | Fair Too acid Droughty Water erosion | 0.50 0.92 0.99 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.82 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.00 |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen----- | 78 | Fair Water erosion Droughty Too acid | 0.06 0.39 0.88 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31TF1: D31-Subalpine woodland silty colluvial slopes | 55 | Fair Droughty Too acid | 0.28 0.92 | Poor Wetness | 0.00 | Poor Wetness Rock fragments Hard to reclaim (rock fragments) | 0.00 0.00 0.00 |
| D31-Subalpine scrub loamy residual slopes-- | 34 | Poor Droughty Too acid | 0.00 0.50 | Good | | Poor Hard to reclaim (rock fragments) Rock fragments | 0.00 0.00 |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 45 | Fair Droughty Too acid | 0.41 0.50 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.92 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.00 |
| D31-Subalpine scrub silty till slopes----- | 41 | Poor Wind erosion Stone content Droughty | 0.00 0.00 0.45 | Fair Stones | 0.01 | Poor Rock fragments Hard to reclaim (rock fragments) Slope | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|---|---------------------------|--|--------------------------|--|--------------------------|---|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen----- | 28 | Poor Wind erosion Droughty Too acid | 0.00 0.60 0.61 | Poor Depth to permafrost Wetness | 0.00 0.22 | Poor Depth to permafrost Slope Wetness | 0.00 0.16 0.22 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 22 | Fair Droughty Water erosion Too acid | 0.15 0.37 0.84 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31-Boreal taiga gravelly colluvial slopes----- | 19 | Poor Wind erosion Too acid Too sandy | 0.00 0.50 0.86 | Poor Slope | 0.00 | Poor Hard to reclaim (rock fragments) Rock fragments Slope | 0.00 0.00 0.00 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 17 | Fair Droughty Too acid | 0.02 0.50 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.00 | Poor Wetness Depth to permafrost Rock fragments | 0.00 0.00 0.00 |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | 44 | Fair Droughty Water erosion Too acid | 0.15 0.37 0.84 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31-Boreal taiga silty eolian slopes, frozen----- | 39 | Fair Droughty Too acid Water erosion | 0.36 0.50 0.90 | Fair No permafrost depth limitation Wetness | 0.01 0.22 | Fair No permafrost depth limitation Wetness No rock fragments | 0.01 0.22 1.00 |
| D31UC1: D31-Boreal tussock organic plains, frozen | 42 | Fair Too acid Droughty Water erosion | 0.50 0.65 0.68 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|---|---------------------------|--|--------------------------|---|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC1: D31-Boreal taiga organic eolian slopes, frozen-- | 24 | Fair Droughty Water erosion Too acid | 0.15 0.37 0.84 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31-Boreal forest loamy high flood plains | 21 | Poor Wind erosion Droughty Too sandy | 0.00 0.66 0.86 | Good | | Poor Rock fragments Hard to reclaim (rock fragments) Too sandy | 0.00 0.20 0.86 |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen----- | 40 | Fair Droughty Too acid | 0.92 0.97 | Poor Depth to permafrost Slope Wetness | 0.00 0.00 0.22 | Poor Slope Depth to permafrost Rock fragments | 0.00 0.00 0.00 |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | 31 | Fair Droughty Too acid Water erosion | 0.07 0.74 0.99 | Poor Wetness Slope No permafrost depth limitation | 0.00 0.00 0.05 | Poor Wetness Rock fragments Slope | 0.00 0.00 0.00 |
| D31UC3: D31-Boreal tussock organic plains, frozen | 65 | Fair Too acid Droughty Water erosion | 0.50 0.65 0.68 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31-Boreal taiga silty colluvial slopes, frozen----- | 18 | Poor Wind erosion Droughty Too acid | 0.00 0.60 0.61 | Poor Depth to permafrost Wetness | 0.00 0.22 | Poor Depth to permafrost Slope Wetness | 0.00 0.16 0.22 |
| D31UC4: D31-Boreal woodland rocky low flood plains | 32 | Poor Too sandy Wind erosion Droughty | 0.00 0.00 0.00 | Poor Wetness Cobble content | 0.00 0.73 | Poor Wetness Rock fragments Too sandy | 0.00 0.00 0.00 |
| D31-Boreal forest loamy high flood plains | 25 | Poor Wind erosion Droughty Too sandy | 0.00 0.66 0.86 | Good | | Poor Rock fragments Hard to reclaim (rock fragments) Too sandy | 0.00 0.20 0.86 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|---|---------------------------|---|----------------------|--|--------------|--|----------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 35 | Poor Wind erosion Stone content Droughty | 0.00 0.00 0.45 | Fair Stones | 0.01 | Poor Rock fragments Hard to reclaim (rock fragments) slope | 0.00 0.00 0.00 |
| D31-Alpine scrub gravelly circles, acid | 30 | Fair Too acid Stone content Droughty | 0.50 0.84 0.90 | Fair Cobble content Stones | 0.89 0.94 | Poor Rock fragments Hard to reclaim (rock fragments) | 0.00 0.00 |
| D31WA1: D31-Alpine water, ponded----- | 95 | Not rated | | Not rated | | Not rated | |
| D31YV1: D31-Boreal forest loamy mid flood plains----- | 36 | Poor Wind erosion Water erosion | 0.00 0.90 | Poor Wetness | 0.00 | Poor Wetness | 0.00 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Poor Wind erosion Water erosion | 0.00 0.68 | Poor Wetness Depth to permafrost | 0.00 0.00 | Poor Wetness Depth to permafrost | 0.00 0.00 |
| D31-Boreal scrub sandy low flood plains----- | 26 | Good | | Poor Wetness | 0.00 | Poor Wetness Hard to reclaim (rock fragments) Rock fragments | 0.00 0.88 0.92 |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen----- | 55 | Fair Water erosion Droughty Too acid | 0.06 0.39 0.88 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Poor Wind erosion Water erosion | 0.00 0.68 | Poor Wetness Depth to permafrost | 0.00 0.00 | Poor Wetness Depth to permafrost | 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 18.--Source of Reclamation Material, Roadfill, and Topsoil--Continued

| Map symbol and soil name | Pct. of map unit | Potential as source of reclamation material | | Potential as source of roadfill | | Potential as source of topsoil | |
|---|---------------------------|--|--------------------------|---|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen----- | 90 | Fair Water erosion Droughty Too acid | 0.06 0.39 0.88 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D31YV8: D31-Boreal water, flowing----- | 70 | Not rated | | Not rated | | Not rated | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | 78 | Poor Wind erosion Water erosion | 0.00 0.68 | Poor Wetness Depth to permafrost | 0.00 0.00 | Poor Wetness Depth to permafrost | 0.00 0.00 |
| D32TL1: D32-Boreal taiga organic plains, frozen | 79 | Fair Water erosion Too acid Droughty | 0.06 0.54 0.68 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 40 | Poor Wind erosion Droughty Too acid | 0.00 0.13 0.88 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.00 | Poor Wetness Depth to permafrost Rock fragments | 0.00 0.00 0.00 |
| D32-Boreal taiga loamy escarpment slopes----- | 30 | Poor Too sandy Droughty Too acid | 0.00 0.66 0.80 | Poor Wetness Slope | 0.00 0.00 | Poor Wetness Slope Rock fragments | 0.00 0.00 0.00 |
| D32-Boreal taiga silty eolian slopes, frozen-- | 20 | Fair Droughty Too acid Water erosion | 0.83 0.99 0.99 | Poor Wetness Depth to permafrost | 0.00 0.00 | Poor Wetness Depth to permafrost Slope | 0.00 0.00 0.37 |
| D32TL4: D32-Boreal taiga organic plains, frozen----- | 83 | Fair Water erosion Too acid Droughty | 0.06 0.54 0.68 | Poor Wetness Depth to permafrost | 0.00 0.00 | Not rated | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 19.--Source of Gravel and Sand

(The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation. The ratings given for the thickest layer are for the thickest layer above and excluding the bottom layer. The numbers in the value columns range from 0.00 to 0.99. The greater the value, the greater the likelihood that the bottom layer or thickest layer of the soil is a source of sand or gravel. See text for further explanation of ratings in this table.)

| Map symbol and soil name | Pct. of map unit | Source of gravel | | Source of sand | |
|---|---------------------------|--|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH1: D31-Boreal forest rocky colluvial slopes----- | 34 | Fair Thickest layer Bottom layer | 0.00 0.29 | Fair Thickest layer Bottom layer | 0.00 0.02 |
| D31-Boreal forest rocky sedimentary colluvial slopes | 24 | Fair Thickest layer Bottom layer | 0.00 0.34 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 17 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.01 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.01 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes | 39 | Fair Thickest layer Bottom layer | 0.00 0.34 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31-Boreal forest rocky colluvial escarpments----- | 31 | Poor Bottom layer Thickest layer | 0.00 0.00 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen----- | 59 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.01 | Poor Bottom layer Thickest layer depth limitation No permafrost | 0.00 0.00 0.01 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 33 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen---- | 36 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 19.--Source of Gravel and Sand--Continued

| Map symbol and soil name | Pct. of map unit | Source of gravel | | Source of sand | |
|---|---------------------------|--|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH5: D31-Boreal forest loamy high flood plains----- | 28 | Poor Thickest layer Bottom layer | 0.00 0.00 | Fair Thickest layer Bottom layer | 0.00 0.07 |
| D31-Boreal scrub rocky drainages----- | 19 | Poor Thickest layer Bottom layer | 0.00 0.00 | Fair Thickest layer Bottom layer | 0.00 0.02 |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 56 | Poor Thickest layer Bottom layer | 0.00 0.00 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31-Boreal rubble land----- | 25 | Poor Bottom layer Thickest layer | 0.00 0.00 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes----- | 26 | Poor Bottom layer Thickest layer | 0.00 0.00 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31-Boreal forest rocky colluvial slopes----- | 24 | Fair Thickest layer Bottom layer | 0.00 0.29 | Fair Thickest layer Bottom layer | 0.00 0.02 |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 20 | Fair No permafrost depth limitation Thickest layer Bottom layer | 0.05 0.12 0.22 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.05 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 32 | Fair No permafrost depth limitation Thickest layer Bottom layer | 0.05 0.12 0.22 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.05 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 29 | Poor Thickest layer Depth to permafrost Bottom layer | 0.00 0.00 0.18 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Subalpine woodland silty colluvial slopes, frozen---- | 20 | Poor Thickest layer Depth to permafrost Bottom layer | 0.00 0.00 0.00 | Poor Thickest layer Depth to permafrost Bottom layer | 0.00 0.00 0.04 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 19.--Source of Gravel and Sand--Continued

| Map symbol and soil name | Pct. of map unit | Source of gravel | | Source of sand | |
|---|---------------------------|--|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen---- | 37 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 27 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen---- | 47 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 43 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen----- | 79 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen----- | 31 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.01 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.01 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 26 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal forest rocky colluvial slopes----- | 23 | Fair Thickest layer Bottom layer | 0.00 0.29 | Fair Thickest layer Bottom layer | 0.00 0.02 |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen---- | 36 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 19.--Source of Gravel and Sand--Continued

| Map symbol and soil name | Pct. of map unit | Source of gravel | | Source of sand | |
|---|---------------------------|--|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31LB2: D31-Boreal forest rocky sedimentary colluvial slopes | 34 | Fair Thickest layer Bottom layer | 0.00 0.34 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31-Boreal forest rocky colluvial slopes----- | 27 | Fair Thickest layer Bottom layer | 0.00 0.29 | Fair Thickest layer Bottom layer | 0.00 0.02 |
| D31MT1: D31-Alpine rubble land----- | 66 | Not rated | | Not rated | |
| D31-Alpine low scrub gravelly colluvial slopes--- | 22 | Fair Thickest layer Bottom layer | 0.00 0.30 | Fair Thickest layer Bottom layer | 0.00 0.07 |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes--- | 32 | Fair Thickest layer Bottom layer | 0.00 0.30 | Fair Thickest layer Bottom layer | 0.00 0.07 |
| D31-Alpine scrub gravelly circles----- | 30 | Fair Thickest layer Bottom layer | 0.00 0.38 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31-Alpine rubble land----- | 24 | Not rated | | Not rated | |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen---- | 25 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Alpine scrub loamy hummocks, frozen----- | 25 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.04 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.04 |
| D31-Alpine low scrub loamy solifluction lobes---- | 22 | Poor Thickest layer Organic matter content Bottom layer | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Bottom layer | 0.00 0.00 0.10 |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 27 | Fair No permafrost depth limitation Thickest layer Bottom layer | 0.05 0.12 0.22 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.05 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 19.--Source of Gravel and Sand--Continued

| Map symbol and soil name | Pct. of map unit | Source of gravel | | Source of sand | |
|---|---------------------------|---|--------------------------|---|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31OF1: D31-Boreal woodland silty eolian slopes, frozen----- | 24 | Poor Thickest layer Depth to permafrost Bottom layer | 0.00 0.00 0.18 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal forest rocky sedimentary colluvial slopes | 21 | Fair Thickest layer Bottom layer | 0.00 0.34 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31OM1: D31-Alpine scrub silty circles----- | 57 | Fair Thickest layer Bottom layer | 0.00 0.30 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31-Alpine rubble land----- | 30 | Not rated | | Not rated | |
| D31OM2: D31-Alpine scrub silty circles----- | 60 | Fair Thickest layer Bottom layer | 0.00 0.30 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31-Subalpine woodland silty colluvial slopes, frozen---- | 18 | Poor Thickest layer Depth to permafrost Bottom layer | 0.00 0.00 0.00 | Poor Thickest layer Depth to permafrost Bottom layer | 0.00 0.00 0.04 |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 48 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Alpine tussock-scrub silty polygons, frozen----- | 29 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen---- | 62 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal taiga silty terraces, frozen----- | 20 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 19.--Source of Gravel and Sand--Continued

| Map symbol and soil name | Pct. of map unit | Source of gravel | | Source of sand | |
|--|---------------------------|---|--------------------------|---|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen---- | 78 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31TF1: D31-Subalpine woodland silty colluvial slopes----- | 55 | Fair Thickest layer Bottom layer | 0.00 0.15 | Fair Thickest layer Bottom layer | 0.00 0.03 |
| D31-Subalpine scrub loamy residual slopes----- | 34 | Fair Thickest layer Bottom layer | 0.12 0.88 | Fair Bottom layer Thickest layer | 0.02 0.03 |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 45 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Subalpine scrub silty till slopes----- | 41 | Fair Thickest layer Bottom layer | 0.00 0.15 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen---- | 28 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 22 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal taiga gravelly colluvial slopes----- | 19 | Fair Thickest layer Bottom layer | 0.00 0.50 | Fair Thickest layer Bottom layer | 0.00 0.08 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 17 | Poor Thickest layer Depth to permafrost Bottom layer | 0.00 0.00 0.18 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 19.--Source of Gravel and Sand--Continued

| Map symbol and soil name | Pct. of map unit | Source of gravel | | Source of sand | |
|---|---------------------------|--|--------------------------|--|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | 44 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 39 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.01 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.01 |
| D31UC1: D31-Boreal tussock organic plains, frozen----- | 42 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 24 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal forest loamy high flood plains----- | 21 | Poor Thickest layer Bottom layer | 0.00 0.00 | Fair Thickest layer Bottom layer | 0.00 0.07 |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen---- | 40 | Poor Thickest layer Depth to permafrost Bottom layer | 0.00 0.00 0.00 | Poor Thickest layer Depth to permafrost Bottom layer | 0.00 0.00 0.04 |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 31 | Fair No permafrost depth limitation Thickest layer Bottom layer | 0.05 0.12 0.22 | Poor Bottom layer Thickest layer No permafrost depth limitation | 0.00 0.00 0.05 |
| D31UC3: D31-Boreal tussock organic plains, frozen----- | 65 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal taiga silty colluvial slopes, frozen---- | 18 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 19.--Source of Gravel and Sand--Continued

| Map symbol and soil name | Pct. of map unit | Source of gravel | | Source of sand | |
|---|---------------------------|---|--------------------------|---|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC4: D31-Boreal woodland rocky low flood plains----- | 32 | Fair Thickest layer Bottom layer | 0.00 0.34 | Fair Thickest layer Bottom layer | 0.06 0.15 |
| D31-Boreal forest loamy high flood plains----- | 25 | Poor Thickest layer Bottom layer | 0.00 0.00 | Fair Thickest layer Bottom layer | 0.00 0.07 |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 35 | Fair Thickest layer Bottom layer | 0.00 0.15 | Poor Bottom layer Thickest layer | 0.00 0.00 |
| D31-Alpine scrub gravelly circles, acid----- | 30 | Fair Thickest layer Bottom layer | 0.00 0.20 | Fair Thickest layer Bottom layer | 0.00 0.01 |
| D31WA1: D31-Alpine water, ponded----- | 95 | Not rated | | Not rated | |
| D31YV1: D31-Boreal forest loamy mid flood plains----- | 36 | Poor Bottom layer Thickest layer | 0.00 0.00 | Fair Thickest layer Bottom layer | 0.00 0.04 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal scrub sandy low flood plains----- | 26 | Poor Bottom layer Thickest layer | 0.00 0.00 | Fair Thickest layer Bottom layer | 0.00 0.02 |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen---- | 55 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 19.--Source of Gravel and Sand--Continued

| Map symbol and soil name | Pct. of map unit | Source of gravel | | Source of sand | |
|---|---------------------------|---|--------------------------|---|--------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen---- | 90 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D31YV8: D31-Boreal water, flowing---- | 70 | Not rated | | Not rated | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | 78 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D32TL1: D32-Boreal taiga organic plains, frozen----- | 79 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 40 | Poor Depth to permafrost Thickest layer Bottom layer | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D32-Boreal taiga loamy escarpment slopes----- | 30 | Fair Thickest layer Bottom layer | 0.00 0.10 | Fair Thickest layer Bottom layer | 0.00 0.13 |
| D32-Boreal taiga silty eolian slopes, frozen----- | 20 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |
| D32TL4: D32-Boreal taiga organic plains, frozen----- | 83 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 | Poor Bottom layer Thickest layer Depth to permafrost | 0.00 0.00 0.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|--|---------------------------|---|--------------------------------------|---|--------------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH1: D31-Boreal forest rocky colluvial slopes----- | 34 | Very limited Slope Large stones content | 1.00 0.76 | Very limited Slope Large stones content | 1.00 0.76 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 24 | Very limited Slope | 1.00 | Very limited Slope | 1.00 |
| D31-Boreal taiga silty eolian slopes, frozen | 17 | Somewhat limited Permafrost Depth to saturated zone Slow water movement | 0.99 0.90 0.60 | Somewhat limited Permafrost Slow water movement Depth to saturated zone | 0.99 0.60 0.60 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 39 | Very limited Slope | 1.00 | Very limited Slope | 1.00 |
| D31-Boreal forest rocky colluvial escarpments | 31 | Very limited Slope Large stones content | 1.00 0.35 | Very limited Slope Large stones content | 1.00 0.35 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen | 59 | Somewhat limited Permafrost Depth to saturated zone Slow water movement | 0.99 0.90 0.60 | Somewhat limited Permafrost Slow water movement Depth to saturated zone | 0.99 0.60 0.60 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 33 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|---|---------------------------|---|--------------------------------------|---|--------------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen----- | 36 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 |
| D31-Boreal forest loamy high flood plains----- | 28 | Very limited Flooding | 1.00 | Not limited | |
| D31-Boreal scrub rocky drainages----- | 19 | Very limited Large stones content | 1.00 | Very limited Large stones content | 1.00 |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 56 | Very limited Slope Large stones content | 1.00 1.00 | Very limited Slope Large stones content | 1.00 1.00 |
| D31-Boreal rubble land----- | 25 | Very limited Slope Gravel Large stones content | 1.00 0.85 0.16 | Very limited Slope Gravel content Large stones content | 1.00 0.85 0.16 |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes----- | 26 | Very limited Slope Slow water movement | 1.00 0.60 | Very limited Slope Slow water movement Gravel content | 1.00 0.60 0.08 |
| D31-Boreal forest rocky colluvial slopes----- | 24 | Very limited Slope Large stones content | 1.00 0.76 | Very limited Slope Large stones content | 1.00 0.76 |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 20 | Very limited Depth to saturated zone Slope Permafrost Slow water movement | 1.00 1.00 0.95 0.15 | Very limited Slope Depth to saturated zone Permafrost Slow water movement | 1.00 1.00 0.95 0.15 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 32 | Very limited Depth to saturated zone Slope Permafrost Slow water movement | 1.00 1.00 0.95 0.15 | Very limited Slope Depth to saturated zone Permafrost Slow water movement | 1.00 1.00 0.95 0.15 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|---|---------------------------|---|--------------------------------------|---|--------------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31CF1: D31-Boreal woodland silty eolian slopes, frozen | 29 | Very limited Permafrost Depth to saturated zone Slope | 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Slope Gravel content | 1.00 1.00 1.00 0.76 |
| D31-Subalpine woodland silty colluvial slopes, frozen---- | 20 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.90 0.19 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.60 0.19 |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen---- | 37 | Very limited Permafrost Depth to saturated zone Slope | 1.00 0.90 0.84 | Very limited Permafrost Slope Depth to saturated zone | 1.00 0.84 0.60 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 27 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen---- | 47 | Very limited Permafrost Depth to saturated zone Slope | 1.00 0.90 0.84 | Very limited Permafrost Slope Depth to saturated zone | 1.00 0.84 0.60 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 43 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen----- | 79 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|---|---------------------------|---|--|---|--|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen----- | 31 | Somewhat limited Permafrost Depth to saturated zone Slow water movement | 0.99 0.90 0.60 | Somewhat limited Permafrost Slow water movement Depth to saturated zone | 0.99 0.60 0.60 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 26 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 |
| D31-Boreal forest rocky colluvial slopes----- | 23 | Very limited Slope Large stones content | 1.00 0.76 | Very limited Slope Large stones content | 1.00 0.76 |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen---- | 36 | Very limited Permafrost Depth to saturated zone Slope | 1.00 0.90 0.84 | Very limited Permafrost Slope Depth to saturated zone | 1.00 0.84 0.60 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 34 | Very limited Slope | 1.00 | Very limited Slope | 1.00 |
| D31-Boreal forest rocky colluvial slopes----- | 27 | Very limited Slope Large stones content | 1.00 0.76 | Very limited Slope Large stones content | 1.00 0.76 |
| D31MT1: D31-Alpine rubble land----- | 66 | Not rated | | Not rated | |
| D31-Alpine low scrub gravelly colluvial slopes----- | 22 | Very limited Slope Large stones content | 1.00 1.00 | Very limited Slope Large stones content | 1.00 1.00 |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | 32 | Very limited Slope Large stones content | 1.00 1.00 | Very limited Slope Large stones content | 1.00 1.00 |
| D31-Alpine scrub gravelly circles----- | 30 | Very limited Slope Large stones content Gravel | 1.00 0.76 0.28 | Very limited Slope Large stones content Gravel content | 1.00 0.76 0.28 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|---|---------------------------|--|------------------------------|--|--------------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31MT2: D31-Alpine rubble land----- | 24 | Not rated | | Not rated | |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | 25 | Very limited Permafrost Depth to saturated zone Organic matter content Slope | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Slope | 1.00 1.00 1.00 1.00 |
| D31-Alpine scrub loamy hummocks, frozen----- | 25 | Very limited Depth to saturated zone Organic matter content Permafrost Slope | 1.00 1.00 0.96 0.16 | Very limited Depth to saturated zone Organic matter content Permafrost Gravel content Slope | 1.00 1.00 0.96 0.29 0.16 |
| D31-Alpine low scrub loamy solifluction lobes----- | 22 | Very limited Slope Large stones content Slow water movement | 1.00 1.00 0.60 | Very limited Slope Large stones content Slow water movement | 1.00 1.00 0.60 |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 27 | Very limited Depth to saturated zone Slope Permafrost Slow water movement | 1.00 1.00 0.95 0.15 | Very limited Slope Depth to saturated zone Permafrost Slow water movement | 1.00 1.00 0.95 0.15 |
| D31-Boreal woodland silty eolian slopes, frozen | 24 | Very limited Permafrost Depth to saturated zone Slope | 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Slope Gravel content | 1.00 1.00 1.00 0.76 |
| D31-Boreal forest rocky sedimentary colluvial slopes | 21 | Very limited Slope | 1.00 | Very limited Slope | 1.00 |
| D31OM1: D31-Alpine scrub silty circles----- | 57 | Very limited Slope Large stones content Slow water movement | 1.00 1.00 0.15 | Very limited Slope Large stones content Slow water movement | 1.00 1.00 0.15 |
| D31-Alpine rubble land----- | 30 | Not rated | | Not rated | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|---|---------------------------|---|--|---|--|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31OM2: D31-Alpine scrub silty circles----- | 60 | Very limited Slope Large stones content Slow water movement | 1.00 1.00 0.15 | Very limited Slope Large stones content Slow water movement | 1.00 1.00 0.15 |
| D31-Subalpine woodland silty colluvial slopes, frozen---- | 18 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.90 0.19 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.60 0.19 |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 48 | Very limited Permafrost Depth to saturated zone Organic matter content Slope | 1.00 1.00 1.00 0.96 | Very limited Permafrost Depth to saturated zone Organic matter content Slope | 1.00 1.00 1.00 0.96 |
| D31-Alpine tussock-scrub silty polygons, frozen----- | 29 | Very limited Permafrost Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 0.60 | Very limited Permafrost Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 0.60 |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen---- | 62 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 |
| D31-Boreal taiga silty terraces, frozen----- | 20 | Very limited Depth to saturated zone Slope Permafrost Slow water movement | 1.00 1.00 1.00 0.60 | Very limited Depth to saturated zone Slope Permafrost Slow water movement | 1.00 1.00 1.00 0.60 |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen---- | 78 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|--|---------------------------|---|--------------------------------------|---|--------------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TF1: D31-Subalpine woodland silty colluvial slopes----- | 55 | Very limited Depth to saturated zone Slope | 1.00 1.00 | Very limited Depth to saturated zone Slope | 1.00 1.00 |
| D31-Subalpine scrub loamy residual slopes----- | 34 | Not limited | | Not limited | |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 45 | Very limited Depth to saturated zone Slope Permafrost Large stones content | 1.00 1.00 1.00 0.19 | Very limited Depth to saturated zone Slope Permafrost Large stones content | 1.00 1.00 1.00 0.19 |
| D31-Subalpine scrub silty till slopes----- | 41 | Very limited Large stones content Slope Slow water movement | 1.00 1.00 0.15 | Very limited Large stones content Slope Slow water movement | 1.00 1.00 0.15 |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen----- | 28 | Very limited Permafrost Depth to saturated zone Slope | 1.00 0.90 0.84 | Very limited Permafrost Slope Depth to saturated zone | 1.00 0.84 0.60 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 22 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 |
| D31-Boreal taiga gravelly colluvial slopes--- | 19 | Very limited Large stones content Slope | 1.00 1.00 | Very limited Large stones content Slope | 1.00 1.00 |
| D31-Boreal woodland silty eolian slopes, frozen | 17 | Very limited Permafrost Depth to saturated zone Slope | 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Slope Gravel content | 1.00 1.00 1.00 0.76 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|---|---------------------------|---|--|---|--|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | 44 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.94 |
| D31-Boreal taiga silty eolian slopes, frozen | 39 | Somewhat limited Permafrost Depth to saturated zone Slow water movement | 0.99 0.90 0.60 | Somewhat limited Permafrost Slow water movement Depth to saturated zone | 0.99 0.60 0.60 |
| D31UC1: D31-Boreal tussock organic plains, frozen----- | 42 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 24 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slope | 1.00 1.00 1.00 1.00 1.00 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slope | 1.00 1.00 1.00 1.00 1.00 |
| D31-Boreal forest loamy high flood plains----- | 21 | Very limited Flooding | 1.00 | Not limited | |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen---- | 40 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.90 0.19 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.60 0.19 |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 31 | Very limited Depth to saturated zone Slope Permafrost Slow water movement | 1.00 1.00 0.95 0.15 | Very limited Slope Depth to saturated zone Permafrost Slow water movement | 1.00 1.00 0.95 0.15 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|---|---------------------------|---|--|---|--|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC3: D31-Boreal tussock organic plains, frozen----- | 65 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 1.00 0.60 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 1.00 0.60 |
| D31-Boreal taiga silty colluvial slopes, frozen----- | 18 | Very limited Permafrost Depth to saturated zone Slope | 1.00 0.90 0.84 | Very limited Permafrost Slope Depth to saturated zone | 1.00 0.84 0.60 |
| D31UC4: D31-Boreal woodland rocky low flood plains----- | 32 | Very limited Depth to saturated zone Flooding Gravel Too sandy | 1.00 1.00 0.23 0.02 | Very limited Depth to saturated zone Flooding Gravel content Too sandy | 1.00 0.40 0.23 0.02 |
| D31-Boreal forest loamy high flood plains----- | 25 | Very limited Flooding | 1.00 | Not limited | |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 35 | Very limited Large stones content Slope Slow water movement | 1.00 1.00 0.15 | Very limited Large stones content Slope Slow water movement | 1.00 1.00 0.15 |
| D31-Alpine scrub gravelly circles, acid----- | 30 | Very limited Large stones content | 1.00 | Very limited Large stones content | 1.00 |
| D31WA1: D31-Alpine water, ponded----- | 95 | Not rated | | Not rated | |
| D31YV1: D31-Boreal forest loamy mid flood plains----- | 36 | Very limited Depth to saturated zone Flooding Slow water movement | 1.00 1.00 0.15 | Very limited Depth to saturated zone Slow water movement | 1.00 0.15 |
| D31-Boreal taiga loamy high flood plains, frozen--- | 32 | Very limited Permafrost Depth to saturated zone Flooding Slow water movement | 1.00 1.00 1.00 0.60 | Very limited Permafrost Depth to saturated zone Slow water movement | 1.00 1.00 0.60 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|---|---------------------------|---|--|---|--|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31YV1: D31-Boreal scrub sandy low flood plains----- | 26 | Very limited Depth to saturated zone Flooding Salinity | 1.00 1.00 0.03 | Very limited Depth to saturated zone Flooding Salinity | 1.00 0.40 0.03 |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen---- | 55 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 |
| D31-Boreal taiga loamy high flood plains, frozen--- | 32 | Very limited Permafrost Depth to saturated zone Flooding Slow water movement | 1.00 1.00 1.00 0.60 | Very limited Permafrost Depth to saturated zone Slow water movement | 1.00 1.00 0.60 |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen---- | 90 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 |
| D31YV8: D31-Boreal water, flowing---- | 70 | Not rated | | Not rated | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen--- | 78 | Very limited Permafrost Depth to saturated zone Flooding Slow water movement | 1.00 1.00 1.00 0.60 | Very limited Permafrost Depth to saturated zone Slow water movement | 1.00 1.00 0.60 |
| D32TL1: D32-Boreal taiga organic plains, frozen----- | 79 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 20.--Camp and Picnic Areas--Continued

| Map symbol and soil name | Pct. of map unit | Camp areas | | Picnic areas | |
|---|---------------------------|---|--|---|--|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 40 | Very limited Depth to saturated zone Slope Permafrost Slow water movement | 1.00 1.00 1.00 0.15 | Very limited Depth to saturated zone Slope Permafrost Gravel content Slow water movement | 1.00 1.00 1.00 0.46 0.15 |
| D32-Boreal taiga loamy escarpment slopes----- | 30 | Very limited Depth to saturated zone Slope | 1.00 1.00 | Very limited Slope Depth to saturated zone | 1.00 1.00 |
| D32-Boreal taiga silty eolian slopes, frozen----- | 20 | Very limited Permafrost Depth to saturated zone Slope Slow water movement | 1.00 1.00 0.63 0.15 | Very limited Permafrost Depth to saturated zone Slope Slow water movement | 1.00 1.00 0.63 0.15 |
| D32TL4: D32-Boreal taiga organic plains, frozen----- | 83 | Very limited Permafrost Depth to saturated zone Ponding Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 | Very limited Permafrost Ponding Depth to saturated zone Organic matter content Slow water movement | 1.00 1.00 1.00 1.00 0.60 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management

(Onsite investigation may be needed to validate the interpretations in this table and to confirm the identity of the soil on a given site. The numbers in the value columns range from 0.01 to 1.00. The larger the value, the greater the limitation. See text for further explanation of ratings in this table.)

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|--|---------------------------|--|------------------------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH1: D31-Boreal forest rocky colluvial slopes----- | 34 | Very limited Slope Large stones content | 1.00 0.76 | Very limited Slope Large stones content | 1.00 0.76 |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | 24 | Very limited Slope | 1.00 | Very limited Slope | 1.00 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 17 | Somewhat limited Permafrost Depth to saturated zone | 0.99 0.22 | Somewhat limited Permafrost Depth to saturated zone | 0.99 0.22 |
| D31BH2: D31-Boreal forest rocky sedimentary colluvial slopes----- | 39 | Very limited Slope | 1.00 | Very limited Slope | 1.00 |
| D31-Boreal forest rocky colluvial escarpments----- | 31 | Very limited Slope Large stones content | 1.00 0.35 | Very limited Slope Large stones content | 1.00 0.35 |
| D31BH3: D31-Boreal taiga silty eolian slopes, frozen----- | 59 | Somewhat limited Permafrost Depth to saturated zone | 0.99 0.22 | Somewhat limited Permafrost Depth to saturated zone | 0.99 0.22 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 33 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31BH5: D31-Boreal taiga/tussock organic terraces, frozen---- | 36 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31-Boreal forest loamy high flood plains----- | 28 | Not limited | | Not limited | |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management--Continued

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|---|---------------------------|--|------------------------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31BH5: D31-Boreal scrub rocky drainages----- | 19 | Very limited Large stones content | 1.00 | Very limited Large stones content | 1.00 |
| D31BH6: D31-Boreal forest gravelly colluvial escarpments----- | 56 | Very limited Slope Large stones content | 1.00 1.00 | Very limited Slope Large stones content | 1.00 1.00 |
| D31-Boreal rubble land----- | 25 | Somewhat limited Large stones content | 0.16 | Somewhat limited Large stones content | 0.16 |
| D31BH7: D31-Subalpine woodland rocky colluvial slopes----- | 26 | Very limited Slope | 1.00 | Somewhat limited Slope | 0.08 |
| D31-Boreal forest rocky colluvial slopes----- | 24 | Very limited Slope Large stones content | 1.00 0.76 | Very limited Slope Large stones content | 1.00 0.76 |
| D31-Boreal forest gravelly colluvial slopes, frozen---- | 20 | Very limited Depth to saturated zone Water erosion Slope Permafrost | 1.00 1.00 1.00 0.95 | Very limited Depth to saturated zone Water erosion Permafrost | 1.00 1.00 0.95 |
| D31CF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 32 | Very limited Depth to saturated zone Water erosion Slope Permafrost | 1.00 1.00 1.00 0.95 | Very limited Depth to saturated zone Water erosion Permafrost | 1.00 1.00 0.95 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 29 | Very limited Permafrost Depth to saturated zone Slope | 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Slope | 1.00 1.00 0.56 |
| D31-Subalpine woodland silty colluvial slopes, frozen---- | 20 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.22 0.19 | Very limited Permafrost Slope Depth to saturated zone Large stones content | 1.00 0.56 0.22 0.19 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management--Continued

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|---|---------------------------|--|----------------------------------|--|----------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31HL1: D31-Boreal taiga silty colluvial slopes, frozen---- | 37 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 27 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31HL2: D31-Boreal taiga silty colluvial slopes, frozen---- | 47 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 43 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31KT1: D31-Boreal taiga organic eolian slopes, frozen----- | 79 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31LB1: D31-Boreal taiga silty eolian slopes, frozen----- | 31 | Somewhat limited Permafrost Depth to saturated zone | 0.99 0.22 | Somewhat limited Permafrost Depth to saturated zone | 0.99 0.22 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 26 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31-Boreal forest rocky colluvial slopes----- | 23 | Very limited Slope Large stones content | 1.00 0.76 | Very limited Slope Large stones content | 1.00 0.76 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management--Continued

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|---|---------------------------|---|--------------------------------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31LB2: D31-Boreal taiga silty colluvial slopes, frozen---- | 36 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 |
| D31-Boreal forest rocky sedimentary colluvial slopes | 34 | Very limited Slope | 1.00 | Very limited Slope | 1.00 |
| D31-Boreal forest rocky colluvial slopes----- | 27 | Very limited Slope Large stones content | 1.00 0.76 | Very limited Slope Large stones content | 1.00 0.76 |
| D31MT1: D31-Alpine rubble land----- | 66 | Not rated | | Not rated | |
| D31-Alpine low scrub gravelly colluvial slopes----- | 22 | Very limited Slope Large stones content | 1.00 1.00 | Very limited Large stones content Slope | 1.00 1.00 |
| D31MT2: D31-Alpine low scrub gravelly colluvial slopes----- | 32 | Very limited Slope Large stones content | 1.00 1.00 | Very limited Large stones content Slope | 1.00 1.00 |
| D31-Alpine scrub gravelly circles----- | 30 | Very limited Slope Large stones content | 1.00 0.76 | Very limited Slope Large stones content | 1.00 0.76 |
| D31-Alpine rubble land----- | 24 | Not rated | | Not rated | |
| D31MT3: D31-Alpine low scrub organic hummocks, frozen----- | 25 | Very limited Permafrost Depth to saturated zone Organic matter content Water erosion Slope | 1.00 1.00 1.00 1.00 0.50 | Very limited Permafrost Depth to saturated zone Organic matter content Water erosion | 1.00 1.00 1.00 1.00 |
| D31-Alpine scrub loamy hummocks, frozen----- | 25 | Very limited Depth to saturated zone Organic matter content Permafrost | 1.00 1.00 0.96 | Very limited Depth to saturated zone Organic matter content Permafrost | 1.00 1.00 0.96 |
| D31-Alpine low scrub loamy solifluction lobes----- | 22 | Very limited Slope Large stones content | 1.00 1.00 | Very limited Large stones content Slope | 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management--Continued

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|---|---------------------------|--|------------------------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31OF1: D31-Boreal forest gravelly colluvial slopes, frozen---- | 27 | Very limited Depth to saturated zone Water erosion Slope Permafrost | 1.00 1.00 1.00 0.95 | Very limited Depth to saturated zone Water erosion Permafrost | 1.00 1.00 0.95 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 24 | Very limited Permafrost Depth to saturated zone Slope | 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Slope | 1.00 1.00 0.56 |
| D31-Boreal forest rocky sedimentary colluvial slopes | 21 | Very limited Slope | 1.00 | Very limited Slope | 1.00 |
| D31OM1: D31-Alpine scrub silty circles----- | 57 | Very limited Slope Large stones content | 1.00 1.00 | Very limited Large stones content Slope | 1.00 1.00 |
| D31-Alpine rubble land----- | 30 | Not rated | | Not rated | |
| D31OM2: D31-Alpine scrub silty circles----- | 60 | Very limited Slope Large stones content | 1.00 1.00 | Very limited Large stones content Slope | 1.00 1.00 |
| D31-Subalpine woodland silty colluvial slopes, frozen---- | 18 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.22 0.19 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.22 0.19 |
| D31SD1: D31-Alpine low scrub organic hummocks, frozen----- | 48 | Very limited Permafrost Depth to saturated zone Organic matter content Water erosion | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Water erosion | 1.00 1.00 1.00 1.00 |
| D31-Alpine tussock-scrub silty polygons, frozen----- | 29 | Very limited Permafrost Depth to saturated zone Organic matter content | 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content | 1.00 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management--Continued

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|--|---------------------------|--|----------------------------------|--|----------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TE1: D31-Boreal taiga/tussock organic terraces, frozen---- | 62 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31-Boreal taiga silty terraces, frozen----- | 20 | Very limited Depth to saturated zone Water erosion Permafrost Slope | 1.00 1.00 1.00 0.18 | Very limited Depth to saturated zone Water erosion Permafrost | 1.00 1.00 1.00 |
| D31TE2: D31-Boreal taiga/tussock organic terraces, frozen---- | 78 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31TF1: D31-Subalpine woodland silty colluvial slopes----- | 55 | Very limited Depth to saturated zone | 1.00 | Very limited Depth to saturated zone | 1.00 |
| D31-Subalpine scrub loamy residual slopes----- | 34 | Not limited | | Not limited | |
| D31TF2: D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | 45 | Very limited Depth to saturated zone Permafrost Large stones content Slope | 1.00 1.00 0.19 0.08 | Very limited Depth to saturated zone Permafrost Large stones content | 1.00 1.00 0.19 |
| D31-Subalpine scrub silty till slopes----- | 41 | Very limited Large stones content | 1.00 | Very limited Large stones content | 1.00 |
| D31TH1: D31-Boreal taiga silty colluvial slopes, frozen---- | 28 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 22 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management--Continued

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|---|---------------------------|---|--------------------------------------|---|--------------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31TH1: D31-Boreal taiga gravelly colluvial slopes----- | 19 | Very limited Large stones content Slope | 1.00 1.00 | Very limited Large stones content Slope | 1.00 0.56 |
| D31-Boreal woodland silty eolian slopes, frozen----- | 17 | Very limited Permafrost Depth to saturated zone Slope | 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Slope | 1.00 1.00 0.56 |
| D31TL1: D31-Boreal taiga organic eolian slopes, frozen----- | 44 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31-Boreal taiga silty eolian slopes, frozen----- | 39 | Somewhat limited Permafrost Depth to saturated zone | 0.99 0.22 | Somewhat limited Permafrost Depth to saturated zone | 0.99 0.22 |
| D31UC1: D31-Boreal tussock organic plains, frozen----- | 42 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31-Boreal taiga organic eolian slopes, frozen----- | 24 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding Water erosion | 1.00 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding Water erosion | 1.00 1.00 1.00 1.00 1.00 |
| D31-Boreal forest loamy high flood plains----- | 21 | Not limited | | Not limited | |
| D31UC2: D31-Subalpine woodland silty colluvial slopes, frozen---- | 40 | Very limited Slope Permafrost Depth to saturated zone Large stones content | 1.00 1.00 0.22 0.19 | Very limited Permafrost Slope Depth to saturated zone Large stones content | 1.00 0.56 0.22 0.19 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management--Continued

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|---|---------------------------|--|------------------------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31UC2: D31-Boreal forest gravelly colluvial slopes, frozen---- | 31 | Very limited Depth to saturated zone Water erosion Slope Permafrost | 1.00 1.00 1.00 0.95 | Very limited Depth to saturated zone Water erosion Permafrost | 1.00 1.00 0.95 |
| D31UC3: D31-Boreal tussock organic plains, frozen----- | 65 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31-Boreal taiga silty colluvial slopes, frozen---- | 18 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 | Very limited Water erosion Permafrost Depth to saturated zone | 1.00 1.00 0.22 |
| D31UC4: D31-Boreal woodland rocky low flood plains----- | 32 | Very limited Depth to saturated zone Flooding Too sandy | 1.00 0.40 0.02 | Very limited Depth to saturated zone Flooding Too sandy | 1.00 0.40 0.02 |
| D31-Boreal forest loamy high flood plains----- | 25 | Not limited | | Not limited | |
| D31UC5: D31-Subalpine scrub silty till slopes----- | 35 | Very limited Large stones content | 1.00 | Very limited Large stones content | 1.00 |
| D31-Alpine scrub gravelly circles, acid----- | 30 | Very limited Large stones content | 1.00 | Very limited Large stones content | 1.00 |
| D31WA1: D31-Alpine water, ponded---- | 95 | Not rated | | Not rated | |
| D31YV1: D31-Boreal forest loamy mid flood plains----- | 36 | Very limited Depth to saturated zone | 1.00 | Very limited Depth to saturated zone | 1.00 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Very limited Permafrost Depth to saturated zone | 1.00 1.00 | Very limited Permafrost Depth to saturated zone | 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management--Continued

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|---|---------------------------|--|------------------------------|--|------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D31YV1: D31-Boreal scrub sandy low flood plains----- | 26 | Very limited Depth to saturated zone Flooding | 1.00 0.40 | Very limited Depth to saturated zone Flooding | 1.00 0.40 |
| D31YV2: D31-Boreal taiga/tussock organic terraces, frozen---- | 55 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31-Boreal taiga loamy high flood plains, frozen----- | 32 | Very limited Permafrost Depth to saturated zone | 1.00 1.00 | Very limited Permafrost Depth to saturated zone | 1.00 1.00 |
| D31YV3: D31-Boreal taiga/tussock organic terraces, frozen---- | 90 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D31YV8: D31-Boreal water, flowing---- | 70 | Not rated | | Not rated | |
| D31YV9: D31-Boreal taiga loamy high flood plains, frozen----- | 78 | Very limited Permafrost Depth to saturated zone | 1.00 1.00 | Very limited Permafrost Depth to saturated zone | 1.00 1.00 |
| D32TL1: D32-Boreal taiga organic plains, frozen----- | 79 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |
| D32TL2: D32-Boreal forest gravelly escarpments, frozen----- | 40 | Very limited Depth to saturated zone Slope Permafrost | 1.00 1.00 1.00 | Very limited Depth to saturated zone Slope Permafrost | 1.00 1.00 1.00 |
| D32-Boreal taiga loamy escarpment slopes----- | 30 | Very limited Depth to saturated zone Slope | 1.00 1.00 | Very limited Depth to saturated zone Slope | 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 21.--Trail Management--Continued

| Map symbol and soil name | Pct. of map unit | Foot traffic and equestrian trails | | Mountain bike and off-road vehicle trails | |
|---|---------------------------|--|----------------------------------|--|----------------------------------|
| | | Rating class and limiting features | Value | Rating class and limiting features | Value |
| D32TL2: D32-Boreal taiga silty eolian slopes, frozen----- | 20 | Very limited Permafrost Depth to saturated zone Water erosion | 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Water erosion | 1.00 1.00 1.00 |
| D32TL4: D32-Boreal taiga organic plains, frozen----- | 83 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 | Very limited Permafrost Depth to saturated zone Organic matter content Ponding | 1.00 1.00 1.00 1.00 |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 22.--Hydric Soils

(Only the soil components that are rated as hydric are listed in the table.)

| Map symbol and map unit name | Component name | Pct. of map unit | Hydric rating | Landform | Hydric soils criteria | | | |
|---|---|------------------|---------------|---|-----------------------|---------------------------|-------------------------|------------------------|
| | | | | | Hydric criteria code | Meets saturation criteria | Meets flooding criteria | Meets ponding criteria |
| D31BH1: Boreal Sedimentary Hills | D31-Boreal woodland silty eolian slopes, frozen | 9 | Yes | Hills | 2B3 | Yes | No | No |
| | D31-Boreal taiga silty drainages, frozen | 5 | Yes | Drainageways | 2B3 | Yes | No | No |
| D31BH3: Boreal Hills with Common Permafrost | D31-Boreal taiga organic eolian slopes, frozen | 33 | Yes | Hills | 3, 1 | No | No | Yes |
| D31BH5: Boreal Valley Bottoms | D31-Boreal taiga/tussock organic terraces, frozen | 36 | Yes | Terraces | 3, 1 | No | No | Yes |
| D31BH7: Boreal and Subalpine Hills with Common Permafrost | D31-Boreal woodland silty eolian slopes, frozen | 10 | Yes | Hills | 2B3 | Yes | No | No |
| D31CF1: Boreal and Subalpine Hills with Extensive Permafrost | D31-Boreal woodland silty eolian slopes, frozen | 29 | Yes | Hills | 2B3 | Yes | No | No |
| D31HL1: Boreal Eolian Hills with Common Permafrost | D31-Boreal taiga organic eolian slopes, frozen | 27 | Yes | Hills | 1, 3 | No | No | Yes |
| D31HL2: Boreal Eolian Hills with Extensive Permafrost | D31-Boreal taiga organic eolian slopes, frozen | 43 | Yes | Hills | 1, 3 | No | No | Yes |
| | D31-Boreal taiga silty drainages, frozen | 10 | Yes | Drainageways | 2B3 | Yes | No | No |
| D31KT1: Boreal Eolian Plains with Extensive Permafrost, Wet | D31-Boreal taiga organic eolian slopes, frozen | 79 | Yes | Hills | 3, 1 | No | No | Yes |
| | D31-Boreal moss organic depressions | 7 | Yes | Thermokarst depressions of loess plains | 3, 1 | No | No | Yes |
| | D31-Boreal scrub-sedge organic depressions | 4 | Yes | Thermokarst depressions of loess plains | 1 | No | No | No |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 22.--Hydric Soils--Continued

| Map symbol and map unit name | Component name | Pct. of map unit | Hydric rating | Landform | Hydric soils criteria | | | |
|---|--|------------------|---------------|--|-----------------------|---------------------------|-------------------------|------------------------|
| | | | | | Hydric criteria code | Meets saturation criteria | Meets flooding criteria | Meets ponding criteria |
| D31LB1: Boreal Hills with Common Permafrost, Thin Surface | D31-Boreal taiga organic eolian slopes, frozen | 26 | Yes | Hills | 1, 3 | No | No | Yes |
| | D31-Boreal taiga silty drainages, frozen | 6 | Yes | Drainageways | 2B3 | Yes | No | No |
| D31MT3: Alpine Rounded Mountains with Common Permafrost | D31-Alpine low scrub organic hummocks, frozen | 25 | Yes | Solifluction lobes on rounded mountains | 1 | No | No | No |
| | D31-Subalpine tussock-scrub loamy colluvial slopes, frozen | 9 | Yes | Turf hummocks on mountains, hills | 2B3 | Yes | No | No |
| D31OF1: Boreal Hills with Common Permafrost, Nonacid | D31-Boreal woodland silty eolian slopes, frozen | 24 | Yes | Hills | 2B3 | Yes | No | No |
| D31SD1: Alpine Rounded Mountains with Extensive Permafrost | D31-Alpine low scrub organic hummocks, frozen | 48 | Yes | Solifluction lobes on rounded mountains | 1 | No | No | No |
| | D31-Alpine tussock-scrub silty polygons, frozen | 29 | Yes | High-center polygons on rounded mountains | 2B3 | Yes | No | No |
| | D31-Subalpine scrub loamy colluvial slopes, frozen | 7 | Yes | Nonsorted circles on hills and rounded mountains | 2B3 | Yes | No | No |
| D31TE1: Boreal Eolian Terraces with Extensive Permafrost | D31-Boreal taiga/tussock organic terraces, frozen | 62 | Yes | Terraces | 3, 1 | No | No | Yes |
| | D31-Boreal forest silty drainages, frozen | 10 | Yes | Drainageways | 2B3 | Yes | No | No |
| | D31-Boreal grass organic depressions | 8 | Yes | Thermokarst depressions of terraces | 3, 1 | No | No | Yes |
| D31TE2: Boreal Terraces with Extensive Permafrost, Wet | D31-Boreal taiga/tussock organic terraces, frozen | 78 | Yes | Terraces | 3, 1 | No | No | Yes |
| | D31-Boreal forest silty drainages, frozen | 12 | Yes | Drainageways | 2B3 | Yes | No | No |
| | D31-Boreal grass organic depressions | 10 | Yes | Thermokarst depressions of terraces | 3, 1 | No | No | Yes |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 22.--Hydric Soils--Continued

| Map symbol and map unit name | Component name | Pct. of map unit | Hydric rating | Landform | Hydric soils criteria | | | |
|--|--|------------------|---------------|--|-----------------------|---------------------------|-------------------------|------------------------|
| | | | | | Hydric criteria code | Meets saturation criteria | Meets flooding criteria | Meets ponding criteria |
| D31TF1: Subalpine Hills | D31-Subalpine scrub rocky drainages | 6 | Yes | Drainageways | 2B3 | Yes | No | No |
| | D31-Subalpine tussock-scrub loamy colluvial slopes, frozen | 5 | Yes | Turf hummocks on mountains, hills | 2B3 | Yes | No | No |
| D31TF2: Subalpine Glaciated Hills | D31-Subalpine tussock-scrub loamy colluvial slopes, frozen | 45 | Yes | Turf hummocks on mountains, hills | 2B3 | Yes | No | No |
| | D31-Subalpine scrub rocky drainages | 8 | Yes | Drainageways | 2B3 | Yes | No | No |
| | D31-Subalpine grass organic swales | 6 | Yes | Swales of hills | 3, 1 | No | No | Yes |
| D31TH1: Boreal Hills with Extensive Permafrost | D31-Boreal taiga organic eolian slopes, frozen | 22 | Yes | Hills | 1, 3 | No | No | Yes |
| | D31-Boreal woodland silty eolian slopes, frozen | 17 | Yes | Hills | 2B3 | Yes | No | No |
| | D31-Boreal taiga silty drainages, frozen | 6 | Yes | Drainageways | 2B3 | Yes | No | No |
| D31TL1: Boreal Eolian Plains with Extensive Permafrost, Moist | D31-Boreal taiga organic eolian slopes, frozen | 44 | Yes | Hills | 1, 3 | No | No | Yes |
| | D31-Boreal moss organic depressions | 3 | Yes | Thermokarst depressions of loess plains | 1, 3 | No | No | Yes |
| D31UC1: Boreal Eolian Hills with Common Permafrost, Wet | D31-Boreal tussock organic plains, frozen | 42 | Yes | Plains | 3, 1 | No | No | Yes |
| | D31-Boreal taiga organic eolian slopes, frozen | 24 | Yes | Hills | 1, 3 | No | No | Yes |
| D31UC2: Subalpine and Boreal Hills | D31-Subalpine scrub loamy colluvial slopes, frozen | 10 | Yes | Nonsorted circles on hills and rounded mountains | 2B3 | Yes | No | No |
| D31UC3: Boreal Plains with Extensive Permafrost | D31-Boreal tussock organic plains, frozen | 65 | Yes | Plains | 1, 3 | No | No | Yes |
| | D31-Boreal taiga silty drainages, frozen | 10 | Yes | Drainageways | 2B3 | Yes | No | No |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 22.--Hydric Soils--Continued

| Map symbol and map unit name | Component name | Pct. of map unit | Hydric rating | Landform | Hydric soils criteria | | | |
|--|--|------------------|---------------|---|-----------------------|---------------------------|-------------------------|------------------------|
| | | | | | Hydric criteria code | Meets saturation criteria | Meets flooding criteria | Meets ponding criteria |
| D31UC4: Boreal Flood Plains with Common Permafrost | D31-Boreal taiga/tussock organic terraces, frozen | 13 | Yes | Terraces | 3, 1 | No | No | Yes |
| | D31-Boreal scrub organic depressions | 11 | Yes | Depressions of terraces | 3, 2B3 | Yes | No | Yes |
| D31UC5: Alpine Glaciated Mountains | D31-Subalpine tussock-scrub loamy colluvial slopes, frozen | 12 | Yes | Turf hummocks on mountains, hills | 2B3 | Yes | No | No |
| | D31-Subalpine scrub rocky drainages | 10 | Yes | Drainageways | 2B3 | Yes | No | No |
| D31WA1: Alpine and Subalpine Water | D31-Subalpine scrub rocky drainages | 5 | Yes | Drainageways | 2B3 | Yes | No | No |
| D31YV2: Boreal Terraces and Flood Plains with Common Permafrost | D31-Boreal taiga/tussock organic terraces, frozen | 55 | Yes | Terraces | 3, 1 | No | No | Yes |
| | D31-Boreal scrub organic depressions | 6 | Yes | Depressions of terraces | 3, 2B3 | Yes | No | Yes |
| D31YV3: Boreal Terraces with Extensive Permafrost | D31-Boreal taiga/tussock organic terraces, frozen | 90 | Yes | Terraces | 3, 1 | No | No | Yes |
| | D31-Boreal grass organic depressions | 10 | Yes | Thermokarst depressions of terraces | 3, 1 | No | No | Yes |
| D31YV9: Boreal High Flood Plains | D31-Boreal scrub organic depressions | 7 | Yes | Depressions of terraces | 2B3, 3 | Yes | No | Yes |
| | D31-Boreal scrub loamy depressions | 4 | Yes | Depressions of terraces | 2B3 | Yes | No | No |
| D32TL1: Boreal Eolian Plains with Common Permafrost | D32-Boreal taiga organic plains, frozen | 79 | Yes | Loess plains | 3, 1 | No | No | Yes |
| | D32-Boreal woodland loamy drainages, frozen | 9 | Yes | Drainageways | 2B3 | Yes | No | No |
| | D32-Boreal moss organic depressions | 4 | Yes | Thermokarst depressions of loess plains | 3, 1 | No | No | Yes |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 22.--Hydric Soils--Continued

| Map symbol and map unit name | Component name | Pct. of map unit | Hydric rating | Landform | Hydric soils criteria | | | |
|---|---|------------------|---------------|---|-----------------------|---------------------------|-------------------------|------------------------|
| | | | | | Hydric criteria code | Meets saturation criteria | Meets flooding criteria | Meets ponding criteria |
| D32TL2: Boreal Escarpments with Common Permafrost | D32-Boreal taiga organic plains, frozen | 7 | Yes | Loess plains | 3, 1 | No | No | Yes |
| | D32-Boreal woodland loamy drainages, frozen | 3 | Yes | Drainageways | 2B3 | Yes | No | No |
| D32TL4: Boreal Eolian Plains with Extensive Permafrost | D32-Boreal taiga organic plains, frozen | 83 | Yes | Loess plains | 3, 1 | No | No | Yes |
| | D32-Boreal woodland loamy drainages, frozen | 10 | Yes | Drainageways | 2B3 | Yes | No | No |
| | D32-Boreal moss organic depressions | 7 | Yes | Thermokarst depressions of loess plains | 3, 1 | No | No | Yes |

Explanation of hydric criteria codes:

1. All Histels except for Folistels, and Histosols except for Folists.
2. Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Historthels great group, Histoturbels great group, Pachic subgroups, or Cumulic subgroups that:
 - A. are somewhat poorly drained and have a water table at the surface (0 centimeters) during the growing season, or
 - B. are poorly drained or very poorly drained and have either:
 - 1) a water table at the surface (0 centimeters) during the growing season if textures are coarse sand, sand, or fine sand in all layers within a depth of 50 centimeters, or
 - 2) a water table at a depth of 15 centimeters or less during the growing season if permeability is equal to or greater than 42.3 micrometers per second in all layers within a depth of 50 centimeters, or
 - 3) a water table at a depth of 25 centimeters or less during the growing season if permeability is less than 42.3 micrometers per second in any layer within a depth of 50 centimeters.
3. Soils that are frequently ponded for periods of long or very long duration during the growing season.
4. Soils that are frequently flooded for periods of long or very long duration during the growing season.

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 23.--Classification of the Soils

Key:

ORDER

Suborder

Great Group

Subgroup

Series or higher category

| | |
|---|---|
| ENTISOLS | |
| Aquents | |
| Cryaquents | / |
| <u>Typic Cryaquents</u> | |
| D31-Boreal scrub loamy depressions----- | Coarse-loamy, mixed, superactive, nonacid Typic Cryaquents |
| D31-Subalpine scrub rocky drainages----- | Sandy-skeletal, mixed Typic Cryaquents |
| Fluvents | |
| Cryofluvents | / |
| <u>Typic Cryofluvents</u> | |
| D31-Boreal forest loamy mid flood plains----- | Coarse-loamy, mixed, superactive, calcareous Typic Cryofluvents |
| D31-Boreal scrub sandy low flood plains----- | Coarse-loamy, mixed, superactive, calcareous Typic Cryofluvents |
| <u>Oxyaquic Cryofluvents</u> | |
| D31-Boreal scrub rocky drainages----- | Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryofluvents |
| Orthents | |
| Cryorthents | / |
| <u>Typic Cryorthents</u> | |
| D31-Boreal forest gravelly colluvial escarpments | Loamy-skeletal, mixed, superactive, nonacid Typic Cryorthents |
| D31-Boreal forest loamy high flood plains----- | Sandy or sandy-skeletal, mixed Typic Cryorthents |
| D31-Boreal woodland rocky low flood plains----- | Sandy or sandy-skeletal, mixed Typic Cryorthents |
| <u>Oxyaquic Cryorthents</u> | |
| D31-Subalpine scrub silty till slopes----- | Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryorthents |
| D31-Subalpine woodland silty colluvial slopes---- | Loamy-skeletal, mixed, superactive, nonacid Oxyaquic Cryorthents |
| Gelorthents | / |
| <u>Oxyaquic Gelorthents</u> | |
| D31-Alpine low scrub loamy solifluction lobes---- | Sandy or sandy-skeletal, mixed, subgelic Oxyaquic Gelorthents |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 23.--Classification of the Soils--Continued

| | |
|---|--|
| HISTOSOLS | |
| Fibrists | |
| Cryofibrists | / |
| <u>Terric Cryofibrists</u> | |
| D31-Boreal scrub-sedge organic depressions----- | Loamy, dysic Terric Cryofibrists |
| D31-Boreal scrub organic depressions----- | Loamy, mixed, euic Terric Cryofibrists |
| D31-Subalpine grass organic swales----- | Loamy, mixed, euic Terric Cryofibrists |
| D31-Boreal scrub organic depressions----- | Loamy, mixed, superactive, euic Terric Cryofibrists |
| <u>Hydric Cryofibrists</u> | |
| D31-Boreal grass organic depressions----- | Dysic Hydric Cryofibrists |
| D31-Boreal moss organic depressions----- | Dysic Hydric Cryofibrists |
| D32-Boreal moss organic depressions----- | Dysic Hydric Cryofibrists |
| INCEPTISOLS | |
| Cryepts | |
| Dystrocryepts | / |
| <u>Typic Dystrocryepts</u> | |
| D31-Subalpine woodland rocky residual slopes----- | Loamy-skeletal, mixed, superactive Typic Dystrocryepts |
| Calcicryepts | / |
| <u>Ustic Calcicryepts</u> | |
| D31-Boreal scrub rocky colluvial escarpments----- | Loamy-skeletal, mixed, superactive Ustic Calcicryepts |
| Haplocryepts | / |
| <u>Ustic Haplocryepts</u> | |
| D31-Boreal forest rocky colluvial escarpments----- | Loamy-skeletal, mixed, superactive Ustic Haplocryepts |
| <u>Typic Haplocryepts</u> | |
| D31-Subalpine woodland rocky colluvial slopes----- | Fragmental, mixed Typic Haplocryepts |
| D31-Boreal forest rocky colluvial slopes----- | Loamy-skeletal, mixed, superactive Typic Haplocryepts |
| D31-Boreal forest rocky sedimentary colluvial slopes----- | Loamy-skeletal, mixed, superactive Typic Haplocryepts |
| D31-Boreal taiga gravelly colluvial slopes----- | Loamy-skeletal, mixed, superactive Typic Haplocryepts |
| D31-Boreal woodland gravelly residual slopes----- | Loamy-skeletal, mixed, superactive Typic Haplocryepts |
| D31-Boreal woodland rocky colluvial slopes----- | Loamy-skeletal, mixed, superactive Typic Haplocryepts |
| D31-Subalpine scrub loamy residual slopes----- | Loamy-skeletal, mixed, superactive Typic Haplocryepts |
| D31-Subalpine woodland rocky colluvial slopes, cold----- | Loamy-skeletal, mixed, superactive Typic Haplocryepts |
| D32-Boreal taiga loamy escarpment slopes----- | Sandy or sandy-skeletal, mixed Typic Haplocryepts |
| Gelepts | |
| Haplogelepts | / |
| <u>Typic Haplogelepts</u> | |
| D31-Alpine low scrub gravelly colluvial slopes--- | Loamy-skeletal, mixed, superactive, acid, subgelic Typic Haplogelepts |
| D31-Alpine scrub gravelly circles, acid----- | Loamy-skeletal, mixed, superactive, acid, subgelic Typic Haplogelepts |
| D31-Alpine scrub gravelly circles----- | Loamy-skeletal, mixed, superactive, nonacid, subgelic Typic Haplogelepts |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 23.--Classification of the Soils--Continued

| | |
|---|--|
| MOLLISOLS | |
| Gelolls | |
| Haplogelolls | / |
| <u>Typic Haplogelolls</u> | |
| D31-Alpine scrub silty circles----- | Loamy-skeletal, mixed, superactive, calcareous, subgelic Typic Haplogelolls |
| GELISOLS | |
| Histels | |
| Fibristels | / |
| <u>Terric Fibristels</u> | |
| D31-Boreal tussock organic plains, frozen----- | Loamy, mixed, dysic, subgelic Terric Fibristels |
| D31-Alpine low scrub organic hummocks, frozen--- | Loamy, mixed, euic, subgelic Terric Fibristels |
| D31-Boreal taiga organic eolian slopes, frozen--- | Loamy, mixed, euic, subgelic Terric Fibristels |
| D31-Boreal taiga/tussock organic terraces, frozen----- | Loamy, mixed, euic, subgelic Terric Fibristels |
| D32-Boreal taiga organic plains, frozen----- | Loamy, mixed, euic, subgelic Terric Fibristels |
| Orthels | |
| Aquorthels | / |
| <u>Fluvaquentic Aquorthels</u> | |
| D32-Boreal woodland loamy drainages, frozen | Coarse-loamy, mixed, superactive, acid, subgelic Fluvaquentic Aquorthels |
| D31-Boreal forest silty drainages, frozen----- | Coarse-loamy, mixed, superactive, nonacid, subgelic Fluvaquentic Aquorthels |
| D31-Boreal taiga silty drainages, frozen | Coarse-loamy, mixed, superactive, nonacid, subgelic Fluvaquentic Aquorthels |
| Haplorthels | / |
| <u>Typic Haplorthels</u> | |
| D31-Boreal forest loamy depressions, frozen----- | Coarse-loamy, mixed, superactive, nonacid, subgelic Typic Haplorthels |
| D32-Boreal taiga silty eolian slopes, frozen----- | Coarse-loamy, mixed, superactive, nonacid, subgelic Typic Haplorthels |
| <u>Fluventic Haplorthels</u> | |
| D31-Boreal taiga silty terraces, frozen----- | Coarse-loamy, mixed, superactive, acid, subgelic Fluventic Haplorthels |
| D31-Boreal forest loamy high flood plains, frozen----- | Coarse-loamy, mixed, superactive, nonacid, subgelic Fluventic Haplorthels |
| D31-Boreal taiga loamy high flood plains, frozen | Coarse-loamy, mixed, superactive, nonacid, subgelic Fluventic Haplorthels |

Soil Survey of Yukon-Charley Rivers National Preserve Area, Alaska

Table 23.--Classification of the Soils--Continued

| | |
|---|--|
| <u>Folistic Haplorthels</u> | |
| D31-Boreal taiga silty colluvial slopes, frozen-- | Coarse-loamy, mixed, superactive, acid, subgelic Folistic Haplorthels |
| D31-Boreal forest loamy colluvial slopes----- | Coarse-loamy, mixed, superactive, nonacid, subgelic Folistic Haplorthels |
| D32-Boreal forest gravelly escarpments, frozen-- | Coarse-loamy, mixed, superactive, nonacid, subgelic Folistic Haplorthels |
| D31-Boreal forest gravelly colluvial slopes, frozen----- | Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels |
| D31-Boreal taiga gravelly drainages----- | Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels |
| D31-Subalpine woodland silty colluvial slopes, frozen----- | Loamy-skeletal, mixed, superactive, nonacid, subgelic Folistic Haplorthels |
| Turbels | |
| Haploturbels | |
| <u>Folistic Haploturbels</u> | |
| D31-Boreal taiga silty eolian slopes, frozen---- | Coarse-loamy, mixed, superactive, acid, subgelic Folistic Haploturbels |
| D31-Alpine scrub loamy hummocks, frozen----- | Coarse-loamy, mixed, superactive, nonacid, subgelic Folistic Haploturbels |
| Histoturbels | |
| <u>Typic Histoturbels</u> | |
| D31-Subalpine tussock-scrub loamy colluvial slopes, frozen----- | Coarse-loamy, mixed, superactive, acid, subgelic Typic Histoturbels |
| D31-Subalpine scrub loamy colluvial slopes, frozen----- | Coarse-loamy, mixed, superactive, nonacid, subgelic Typic Histoturbels |
| D31-Alpine tussock-scrub silty polygons, frozen-- | Coarse-silty, mixed, superactive, acid, subgelic Typic Histoturbels |
| D31-Boreal woodland silty eolian slopes, frozen-- | Loamy-skeletal, mixed, superactive, acid, subgelic Typic Histoturbels |

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